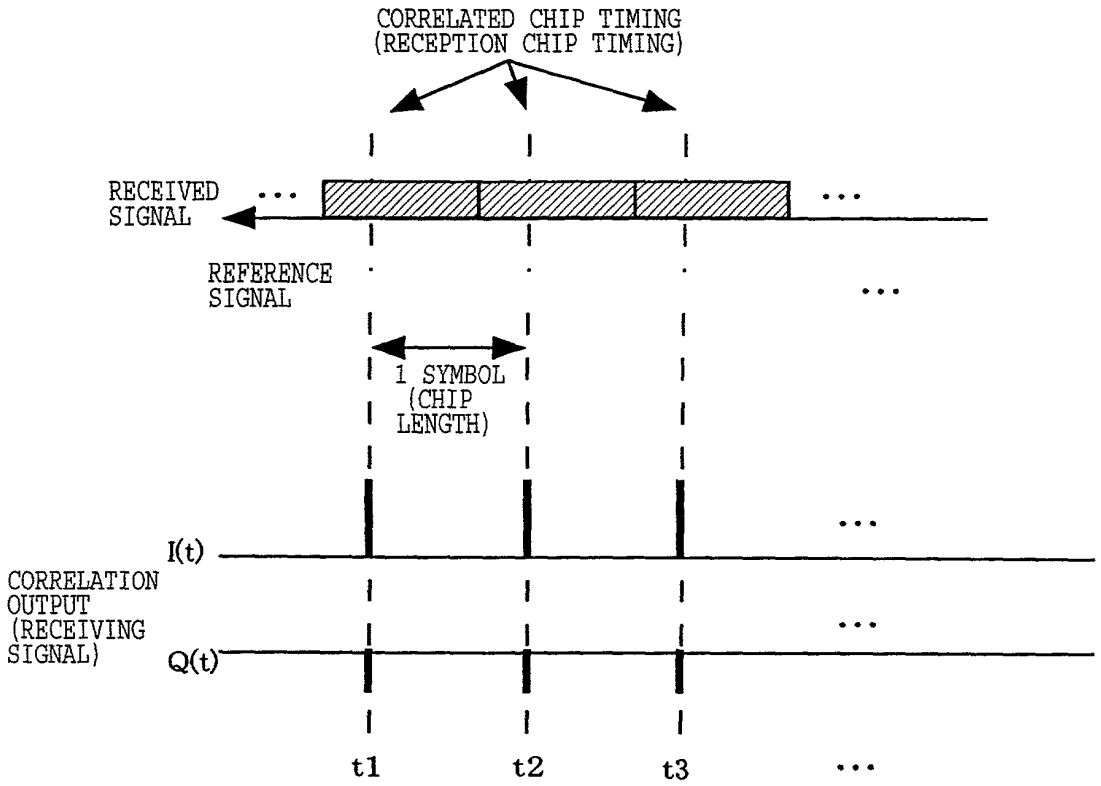


RECEIVING SIGNAL VECTOR AFTER THE SAME PHASE AVERAGING

$$\mathbf{r}_{\_ave} = I_{\_ave} + jQ_{\_ave}$$

$$\left(I_{\_ave} = \frac{1}{N}\sum_{j=1}^{N} I(t_j) \quad , \quad Q_{\_ave} = \frac{1}{N}\sum_{j=1}^{N} Q(t_j) \right)$$

WHEREIN tj(j = 1 ~ N) IS SUFFICIENT SHORT PERIOD RELATIVE TO FLUCTUATION OF FADING

DESIRED SIGNAL POWER $P_S = |\mathbf{r}_{\_ave}|^2$

INTERFERENCE SIGNAL POWER $P_I = \frac{1}{N-1}\sum_{j=1}^{N-1} |\mathbf{r}(t_j) - \mathbf{r}_{\_ave}|^2$ BUT $\mathbf{r} = I(t) + jQ(t)$

FIG.1

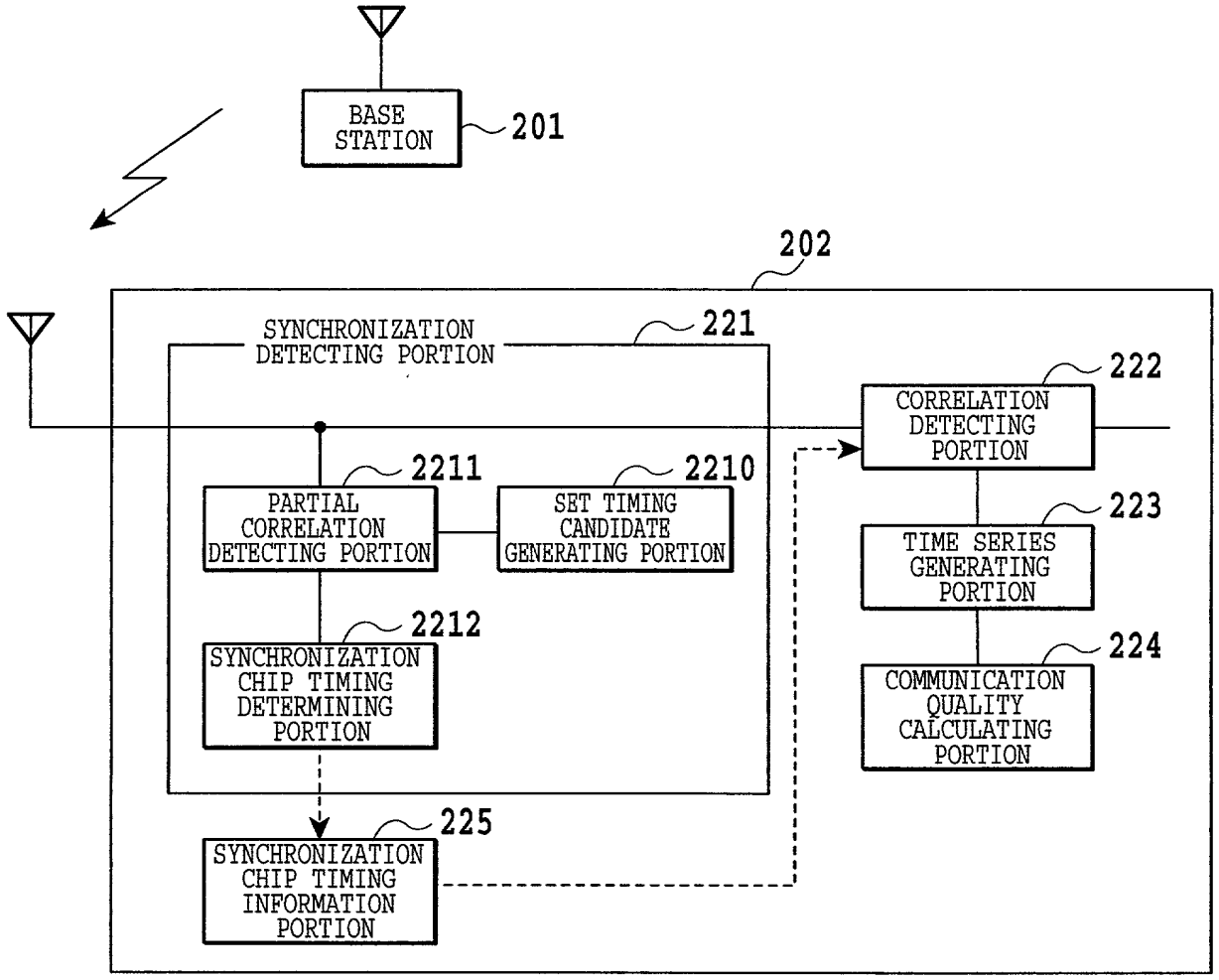

BASE STATION
201
202
SYNCHRONIZATION DETECTING PORTION
221
CORRELATION DETECTING PORTION
222
PARTIAL CORRELATION DETECTING PORTION
2211
SET TIMING CANDIDATE GENERATING PORTION
2210
TIME SERIES GENERATING PORTION
223
SYNCHRONIZATION CHIP TIMING DETERMINING PORTION
2212
COMMUNICATION QUALITY CALCULATING PORTION
224
SYNCHRONIZATION CHIP TIMING INFORMATION PORTION
225

FIG.2

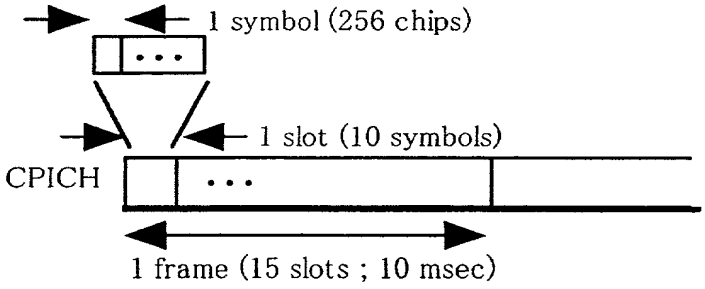

1 symbol (256 chips)
1 slot (10 symbols)
CPICH
1 frame (15 slots ; 10 msec)

FIG.3

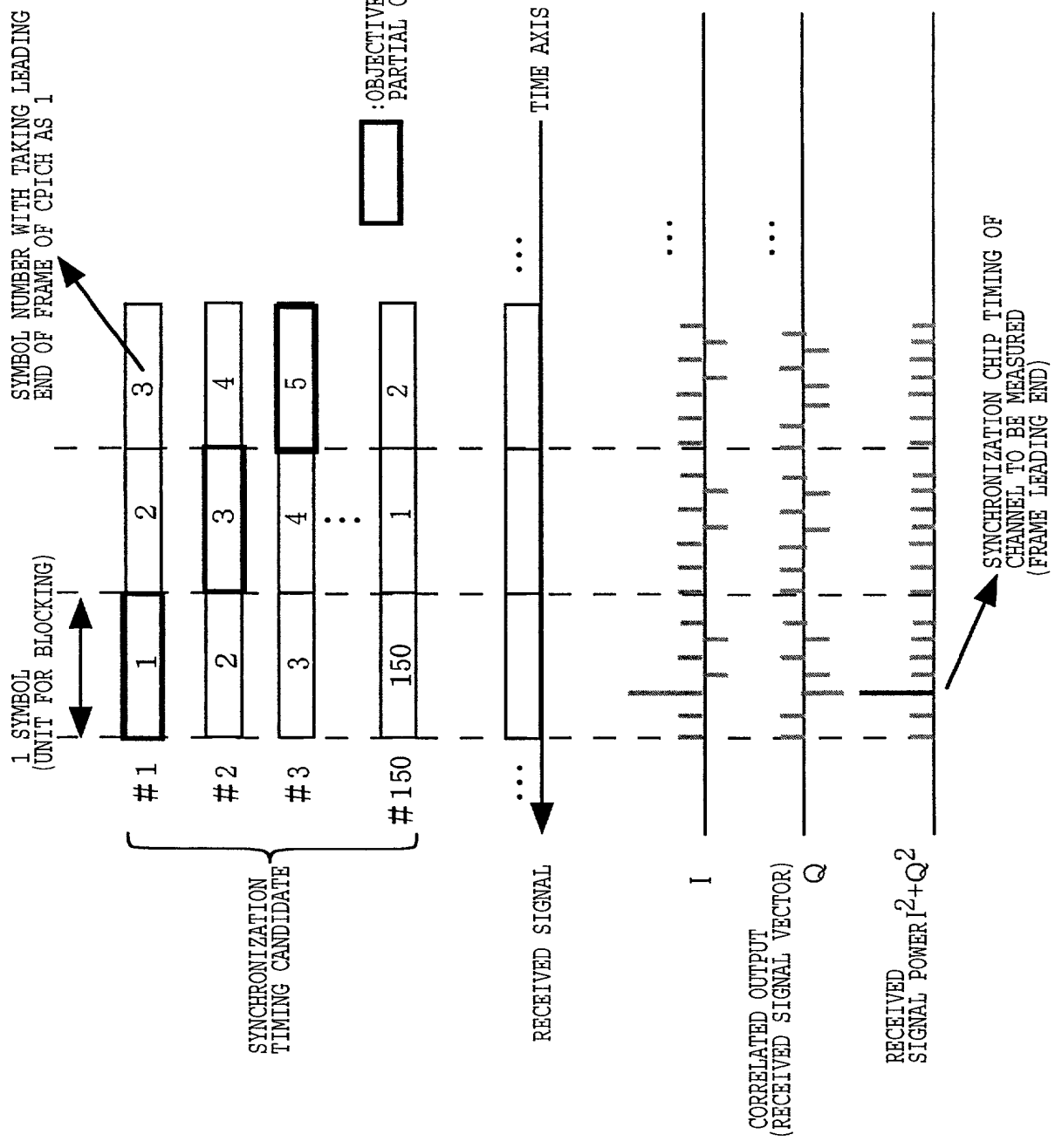

1 SYMBOL
(UNIT FOR BLOCKING)
SYMBOL NUMBER WITH TAKING LEADING
END OF FRAME OF CPICH AS 1
#1
#2
#3
#150
SYNCHRONIZATION
TIMING CANDIDATE
:OBJECTIVE SYMBOL OF
PARTIAL CORRELATION
TIME AXIS
RECEIVED SIGNAL
I
Q
CORRELATED OUTPUT
(RECEIVED SIGNAL VECTOR)
RECEIVED
SIGNAL POWER I^2+Q^2
SYNCHRONIZATION CHIP TIMING OF
CHANNEL TO BE MEASURED
(FRAME LEADING END)

FIG.4

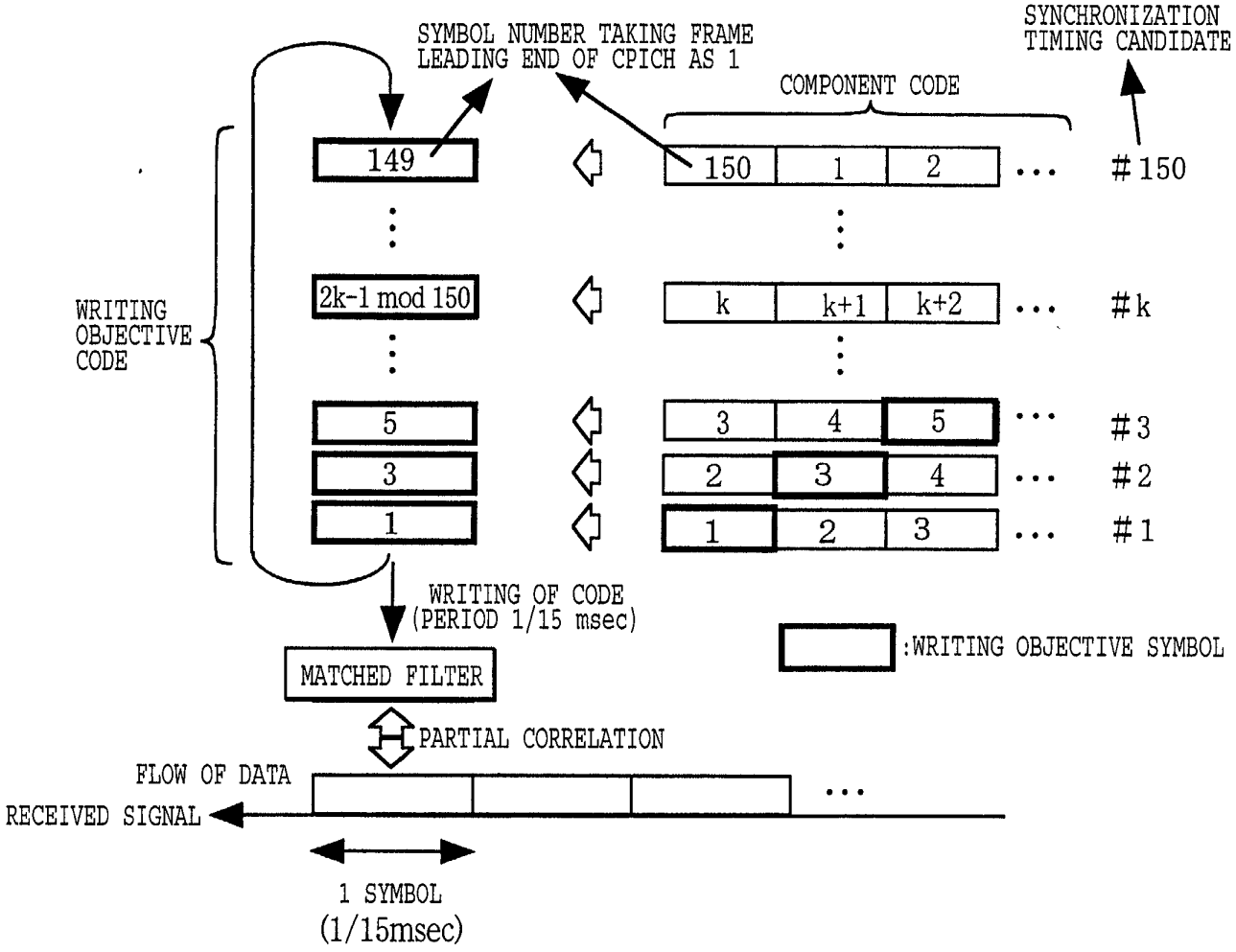

SYMBOL NUMBER TAKING FRAME LEADING END OF CPICH AS 1
SYNCHRONIZATION TIMING CANDIDATE
COMPONENT CODE
WRITING OBJECTIVE CODE
149
150
1
2
#150
2k-1 mod 150
k
k+1
k+2
#k
5
3
1
3
4
5
#3
2
3
4
#2
1
2
3
#1
WRITING OF CODE (PERIOD 1/15 msec)
:WRITING OBJECTIVE SYMBOL
MATCHED FILTER
PARTIAL CORRELATION
FLOW OF DATA
RECEIVED SIGNAL
1 SYMBOL
(1/15msec)

FIG.5

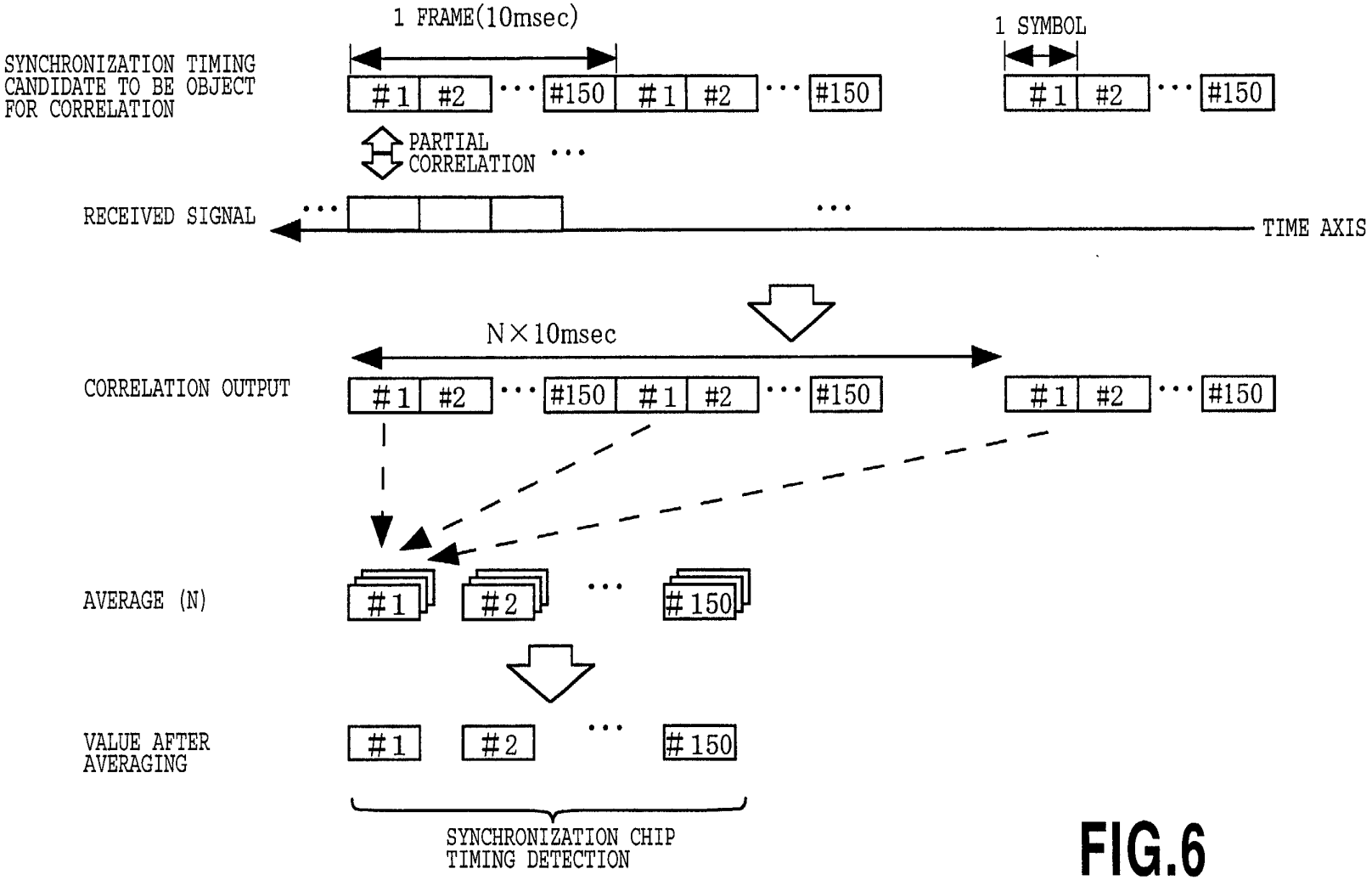

1 FRAME(10msec)
1 SYMBOL
SYNCHRONIZATION TIMING CANDIDATE TO BE OBJECT FOR CORRELATION
#1
#2
#150
PARTIAL CORRELATION
RECEIVED SIGNAL
TIME AXIS
N×10msec
CORRELATION OUTPUT
AVERAGE (N)
VALUE AFTER AVERAGING
SYNCHRONIZATION CHIP TIMING DETECTION

FIG.6

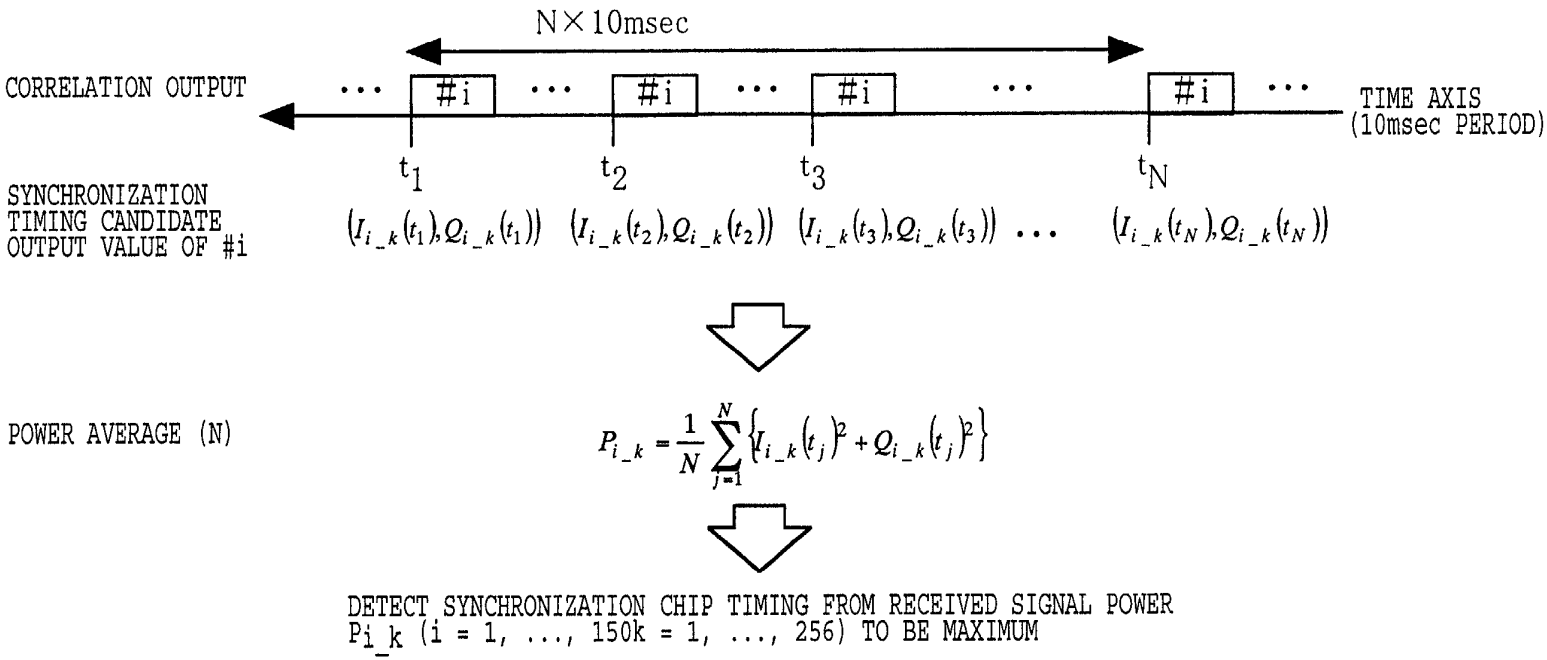

N×10msec
CORRELATION OUTPUT
#i
#i
#i
#i
TIME AXIS
(10msec PERIOD)
t1
t2
t3
tN
SYNCHRONIZATION TIMING CANDIDATE OUTPUT VALUE OF #i
$(I_{i\_k}(t_1), Q_{i\_k}(t_1))$ $(I_{i\_k}(t_2), Q_{i\_k}(t_2))$ $(I_{i\_k}(t_3), Q_{i\_k}(t_3))$ ... $(I_{i\_k}(t_N), Q_{i\_k}(t_N))$
POWER AVERAGE (N)
$P_{i\_k} = \frac{1}{N}\sum_{j=1}^{N}\{I_{i\_k}(t_j)^2 + Q_{i\_k}(t_j)^2\}$
DETECT SYNCHRONIZATION CHIP TIMING FROM RECEIVED SIGNAL POWER
Pi_k (i = 1, ..., 150k = 1, ..., 256) TO BE MAXIMUM

FIG.7

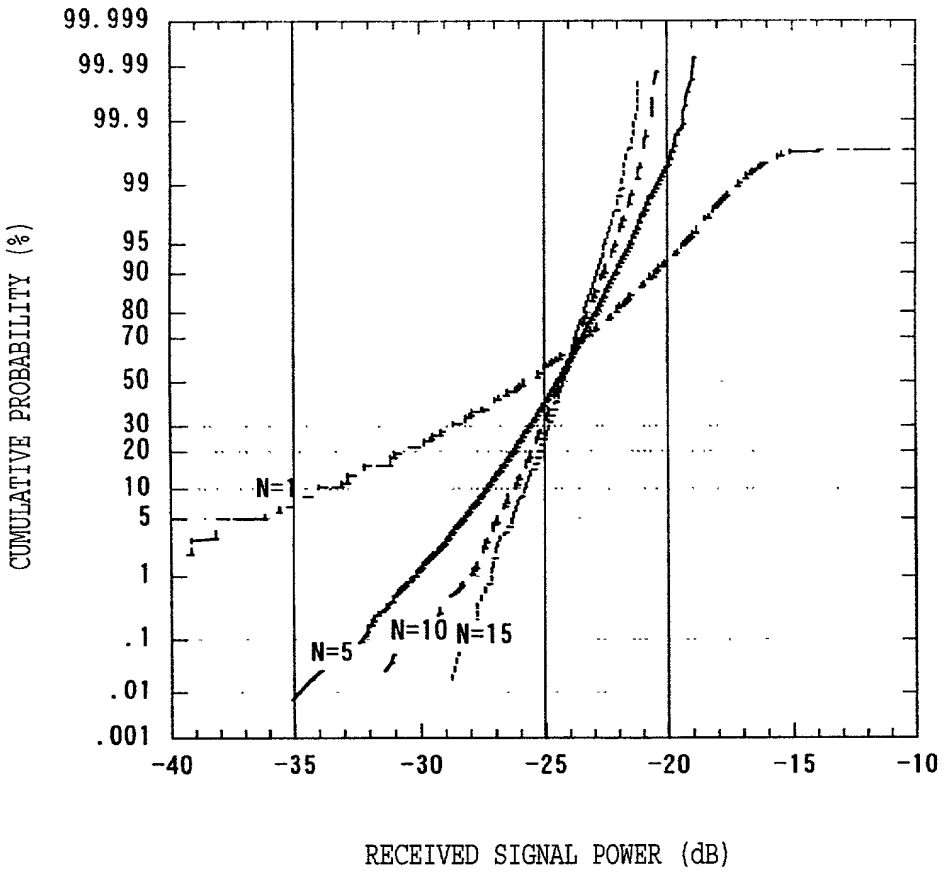

99.999
99.99
99.9
99
95
90
80
70
50
30
20
10
5
1
.1
.01
.001
CUMULATIVE PROBABILITY (%)
N=1
N=5
N=10
N=15
-40
-35
-30
-25
-20
-15
-10
RECEIVED SIGNAL POWER (dB)

FIG.8

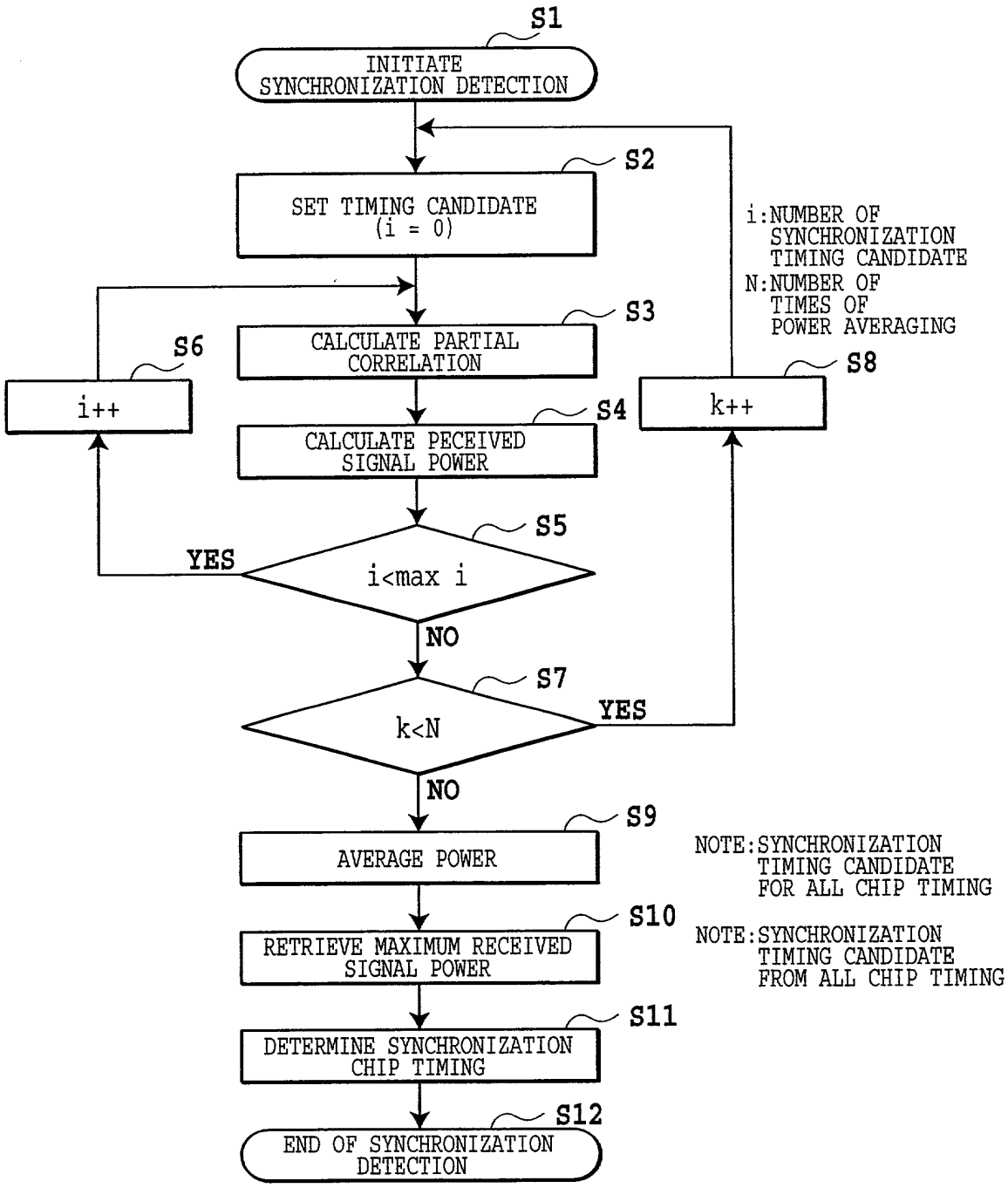

S1
INITIATE SYNCHRONIZATION DETECTION
S2
SET TIMING CANDIDATE (i = 0)
S3
CALCULATE PARTIAL CORRELATION
S4
CALCULATE PECEIVED SIGNAL POWER
S5
i<max i
YES
NO
S6
i++
S7
k<N
YES
NO
S8
k++
S9
AVERAGE POWER
S10
RETRIEVE MAXIMUM RECEIVED SIGNAL POWER
S11
DETERMINE SYNCHRONIZATION CHIP TIMING
S12
END OF SYNCHRONIZATION DETECTION
i:NUMBER OF SYNCHRONIZATION TIMING CANDIDATE
N:NUMBER OF TIMES OF POWER AVERAGING
NOTE:SYNCHRONIZATION TIMING CANDIDATE FOR ALL CHIP TIMING
NOTE:SYNCHRONIZATION TIMING CANDIDATE FROM ALL CHIP TIMING

FIG.9

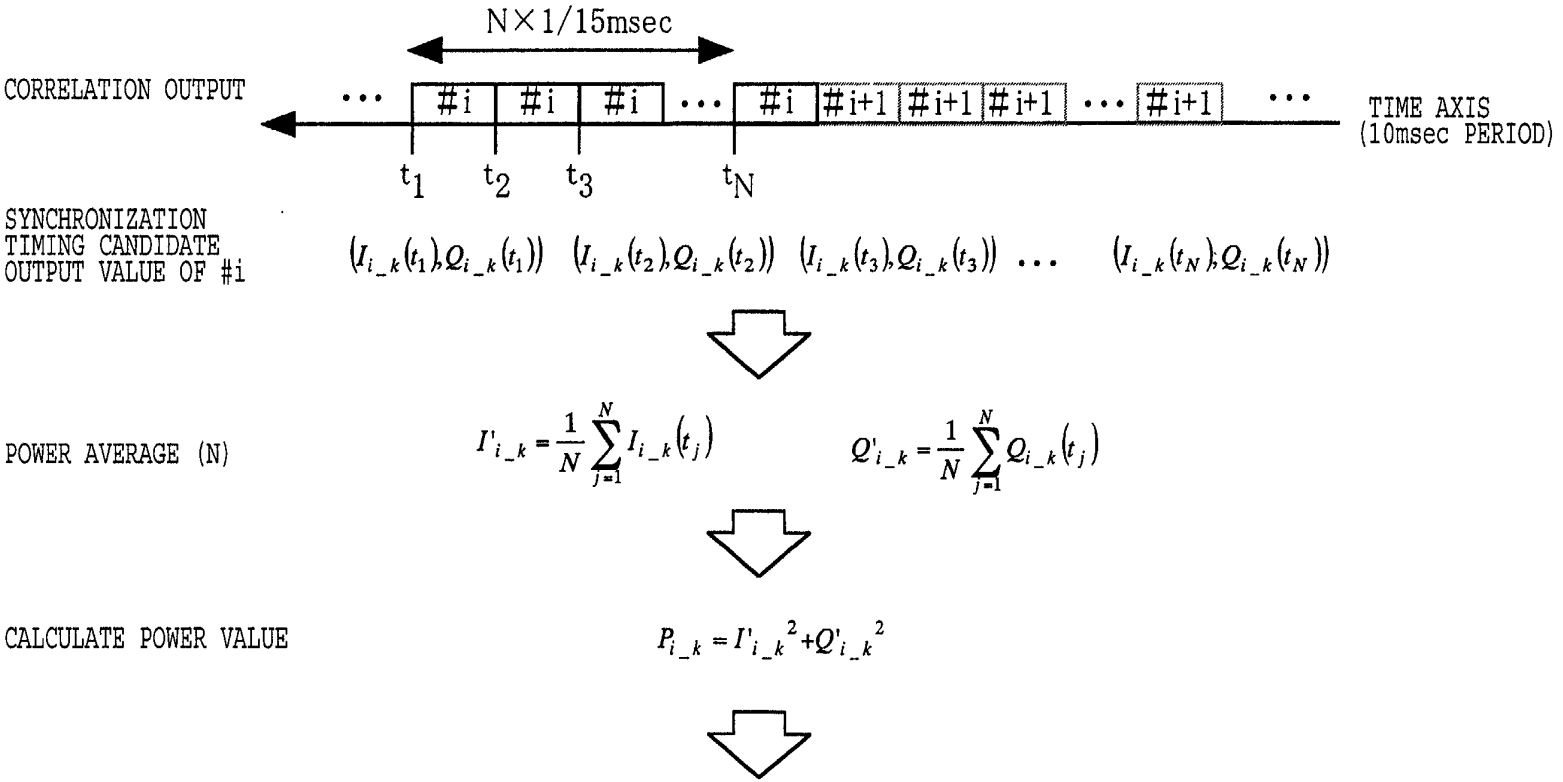

N×1/15msec
CORRELATION OUTPUT
#i
#i+1
TIME AXIS
(10msec PERIOD)
t1
t2
t3
tN
SYNCHRONIZATION TIMING CANDIDATE OUTPUT VALUE OF #i
$(I_{i\_k}(t_1), Q_{i\_k}(t_1))$ $(I_{i\_k}(t_2), Q_{i\_k}(t_2))$ $(I_{i\_k}(t_3), Q_{i\_k}(t_3))$ ... $(I_{i\_k}(t_N), Q_{i\_k}(t_N))$
POWER AVERAGE (N)
$I'_{i\_k} = \frac{1}{N}\sum_{j=1}^{N} I_{i\_k}(t_j)$
$Q'_{i\_k} = \frac{1}{N}\sum_{j=1}^{N} Q_{i\_k}(t_j)$
CALCULATE POWER VALUE
$P_{i\_k} = I'^{2}_{i\_k} + Q'^{2}_{i\_k}$
DETECT SYNCHRONIZATION CHIP TIMING FROM RECEIVED SIGNAL POWER
Pi_k (i = 1, ..., 150k = 1, ..., 256) TO BE MAXIMUM

FIG.10

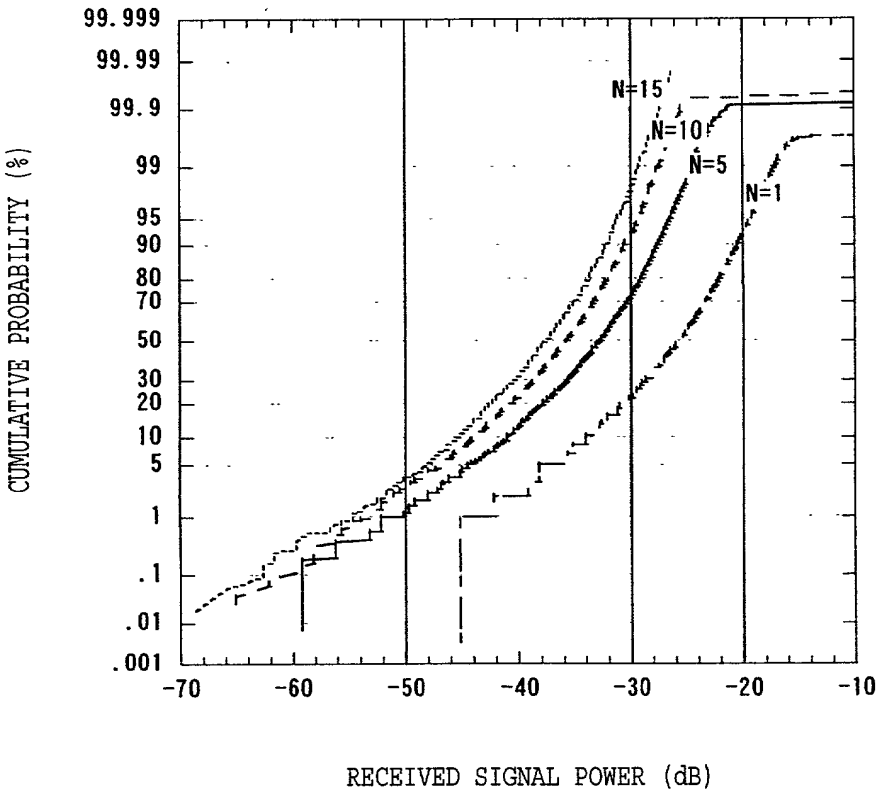

99.999
99.99
99.9
99
95
90
80
70
50
30
20
10
5
1
.1
.01
.001
CUMULATIVE PROBABILITY (%)
N=15
N=10
N=5
N=1
-70
-60
-50
-40
-30
-20
-10
RECEIVED SIGNAL POWER (dB)

FIG.11

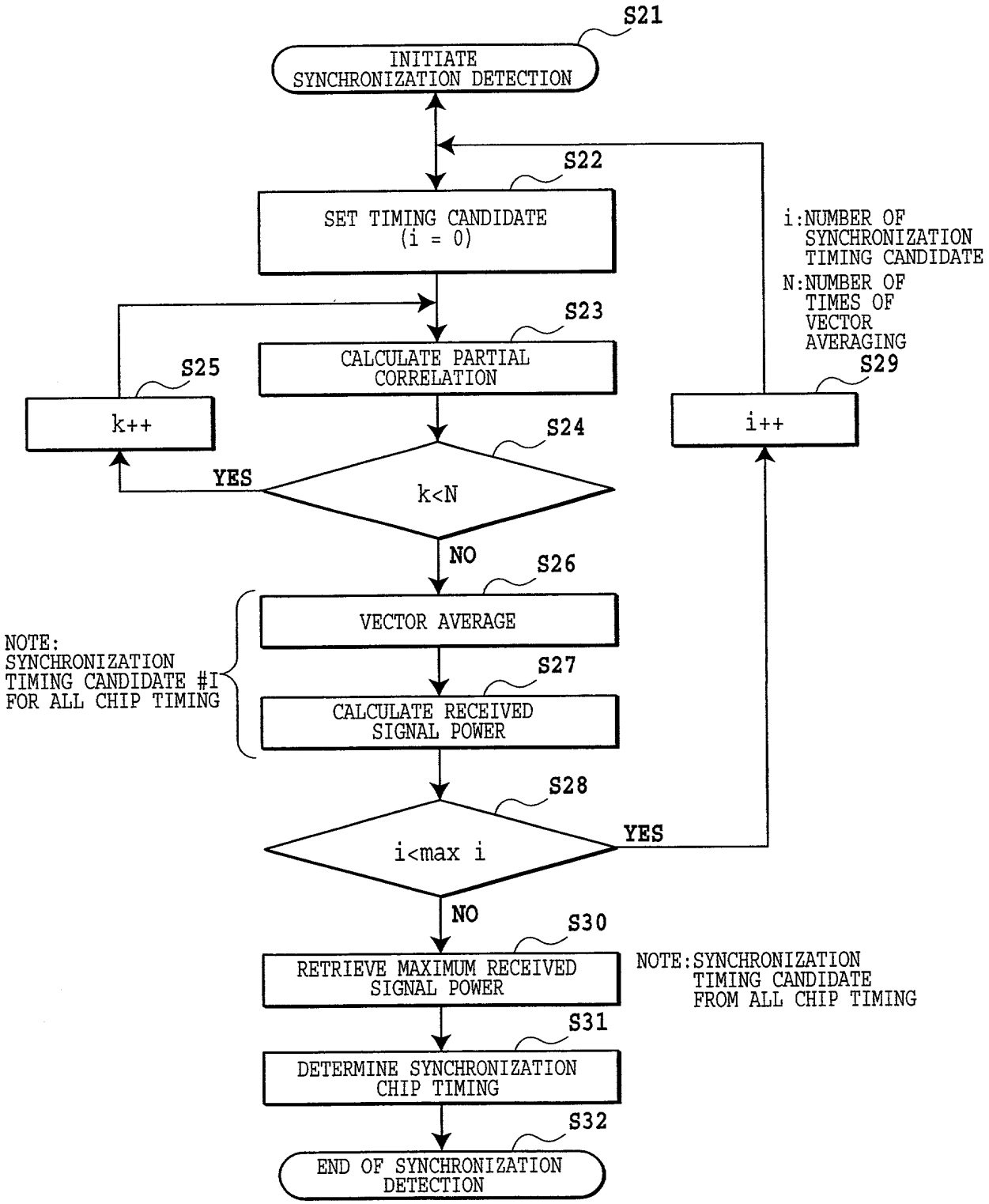


FIG.12

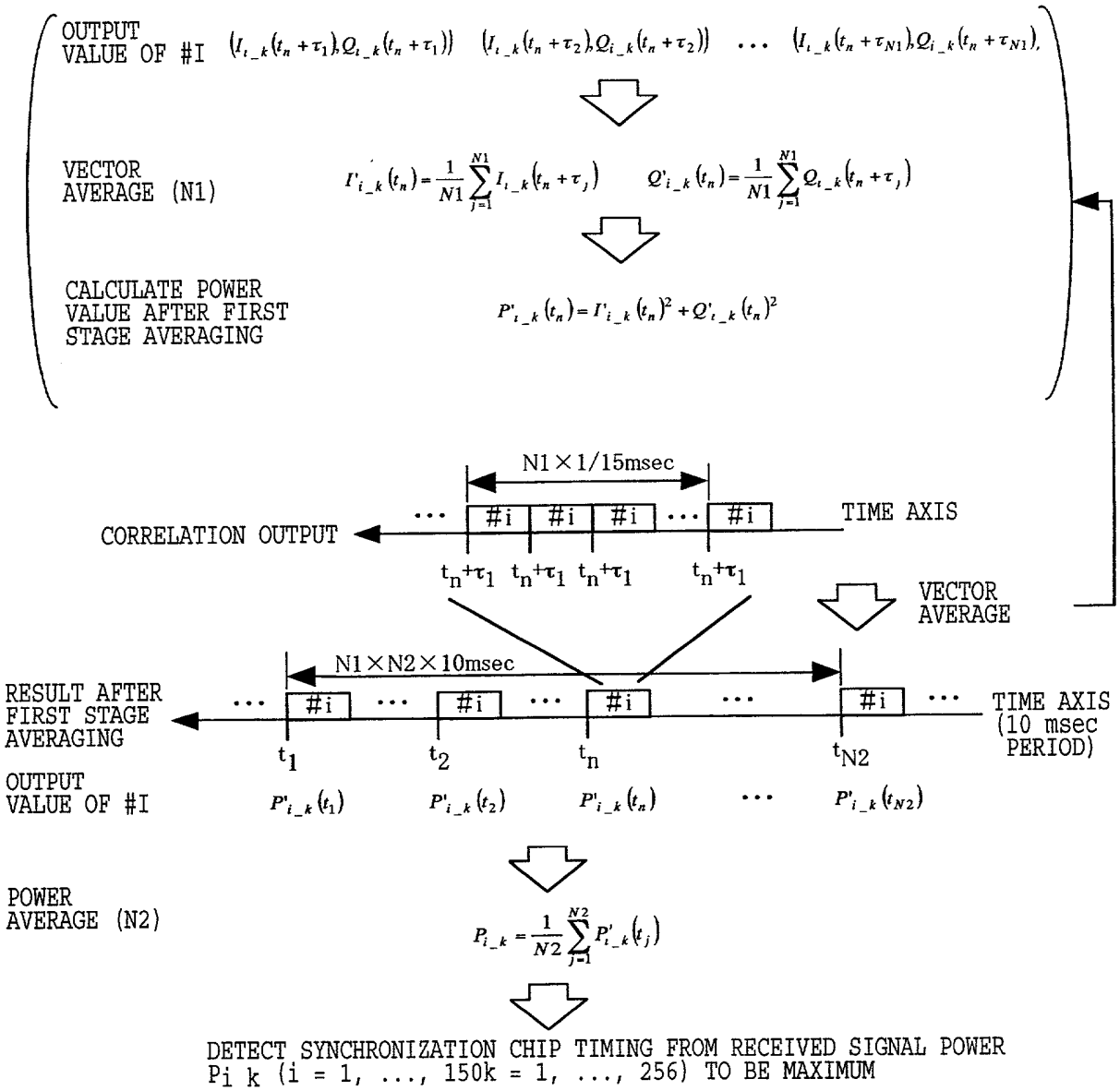

OUTPUT VALUE OF #I
VECTOR AVERAGE (N1)
CALCULATE POWER VALUE AFTER FIRST STAGE AVERAGING
N1×1/15msec
CORRELATION OUTPUT
TIME AXIS
VECTOR AVERAGE
N1×N2×10msec
RESULT AFTER FIRST STAGE AVERAGING
TIME AXIS (10 msec PERIOD)
OUTPUT VALUE OF #I
POWER AVERAGE (N2)
DETECT SYNCHRONIZATION CHIP TIMING FROM RECEIVED SIGNAL POWER
Pi_k (i = 1, ..., 150k = 1, ..., 256) TO BE MAXIMUM

FIG.13

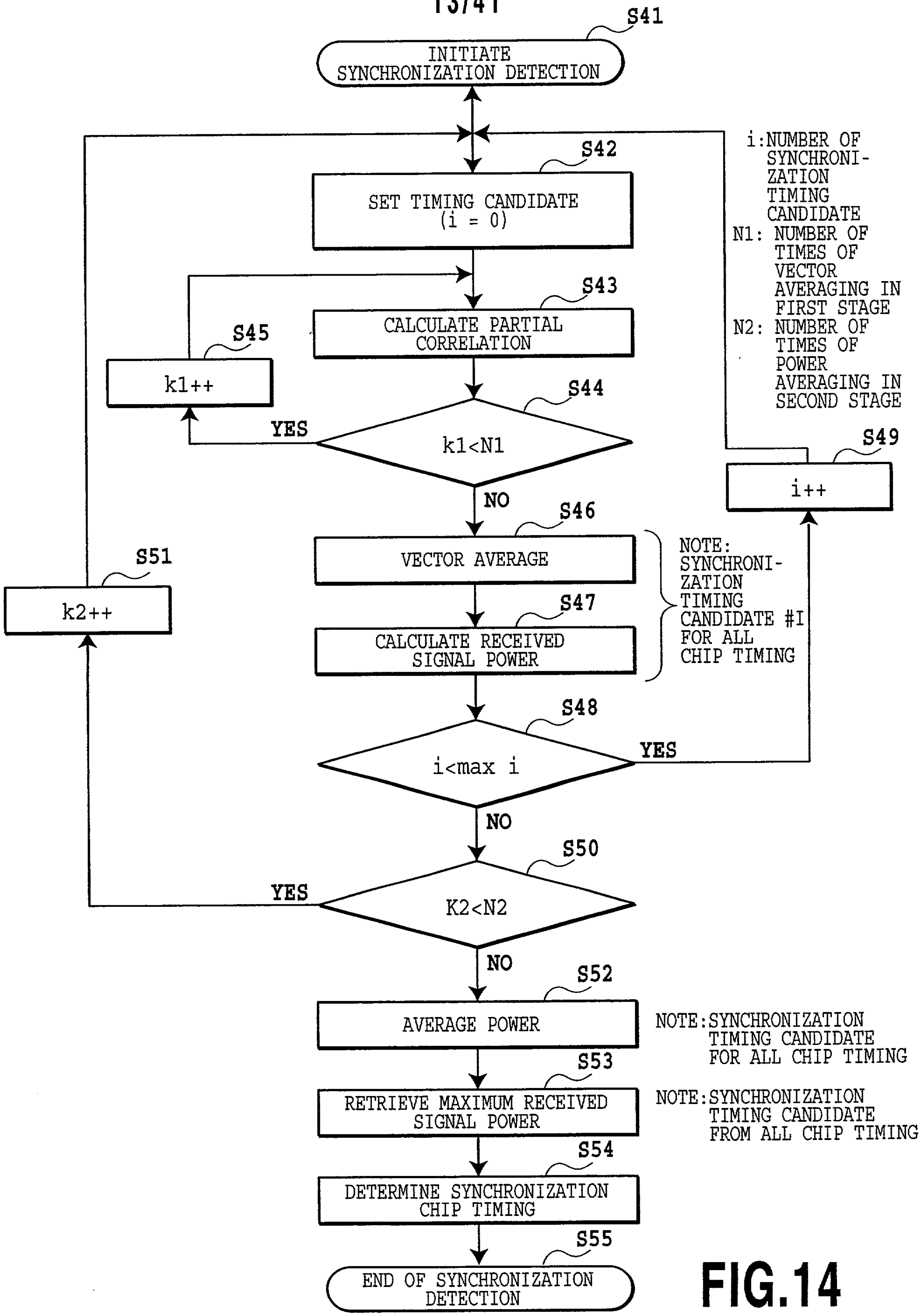
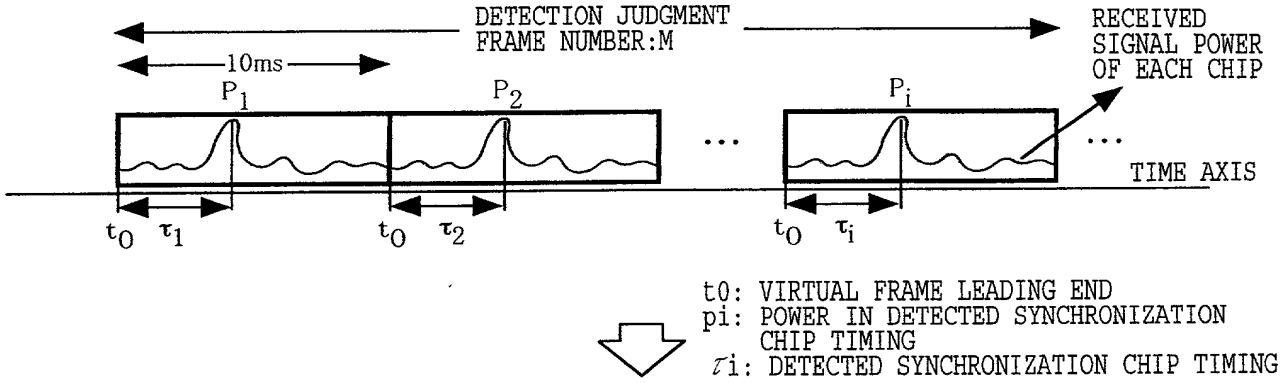


FIG.14



CALCULATE FOR JUDGMENT

AVERAGE VALUE OF SYNCHRONIZATION CHIP TIMING

$$T_m = \frac{\sum_{i=1}^{M} P_i \cdot \tau_i}{\sum_{i=1}^{M} P_i}$$

STANDARD DEVIATION OF SYNCHRONIZATION CHIP TIMING

$$T_s = \sqrt{\frac{\sum_{i=1}^{M} P_i \cdot (\tau_i - Tm)^2}{\sum_{i=1}^{M} P_i}}$$

DETECTION JUDGMENT

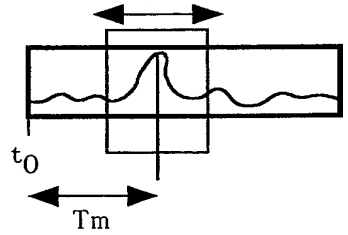
ts ≦ Ncp →A DETECTION SUCCESSFUL
ts > Ncp →A DETECTION FAILED

- START MEASUREMENT BY MEASUREMENT WINDOW SHOWN IN RIGHT SIDE WHEN DETECTION SUCCESSFUL
- PERFORM SYNCHRONIZATION DETECTION AGAIN WHEN DETECTION FAILED

DETERMINE MEASUREMENT WINDOW

MEASUREMENT WINDOW Tw

$Tm-Ncp \leqq Tw \leqq Tm+Ncp$



NOTE: DEFINITION OF NCP
MEASURE 256 CHIPS BY MEASURING PORTION
→Ncp = 256/2
MEASURE 512 CHIP
→Ncp = 512/2

FIG.15

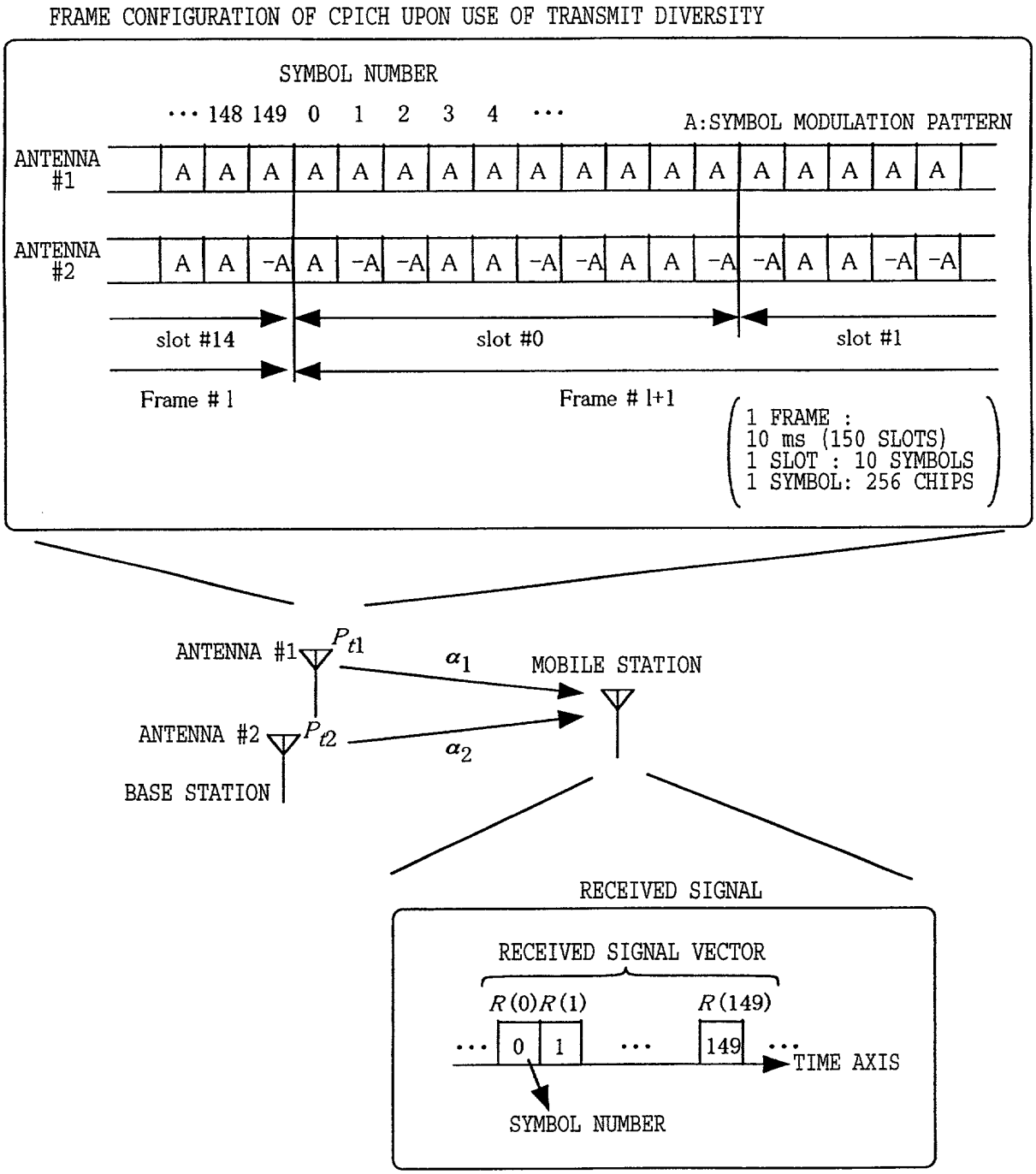

FRAME CONFIGURATION OF CPICH UPON USE OF TRANSMIT DIVERSITY
SYMBOL NUMBER
··· 148 149 0 1 2 3 4 ···
A:SYMBOL MODULATION PATTERN
ANTENNA #1
ANTENNA #2
slot #14
slot #0
slot #1
Frame # l
Frame # l+1
1 FRAME :
10 ms (150 SLOTS)
1 SLOT : 10 SYMBOLS
1 SYMBOL: 256 CHIPS
ANTENNA #1
ANTENNA #2
BASE STATION
MOBILE STATION
RECEIVED SIGNAL
RECEIVED SIGNAL VECTOR
R(0)R(1)
R(149)
TIME AXIS
SYMBOL NUMBER

FIG.16

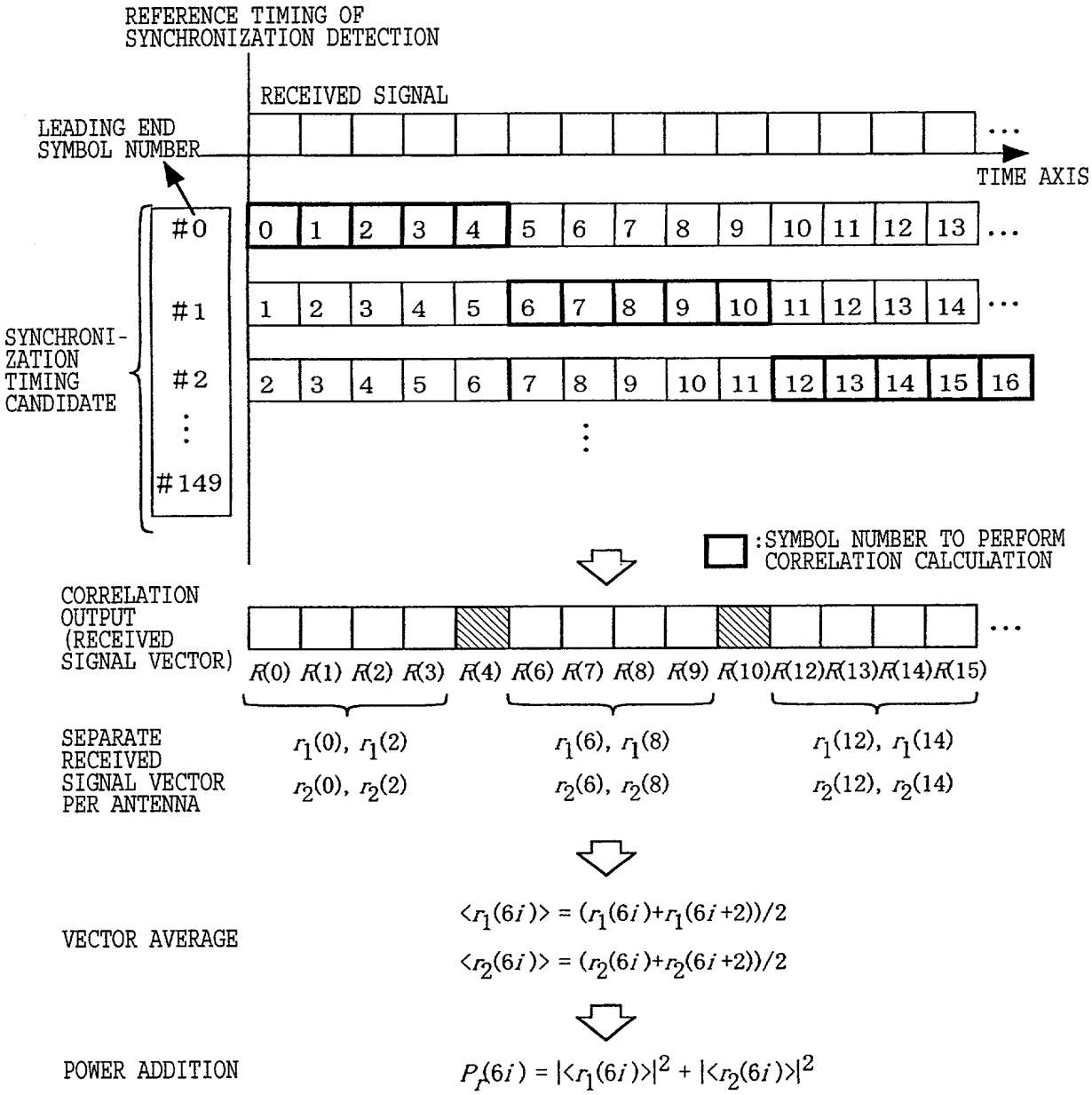


FIG.17

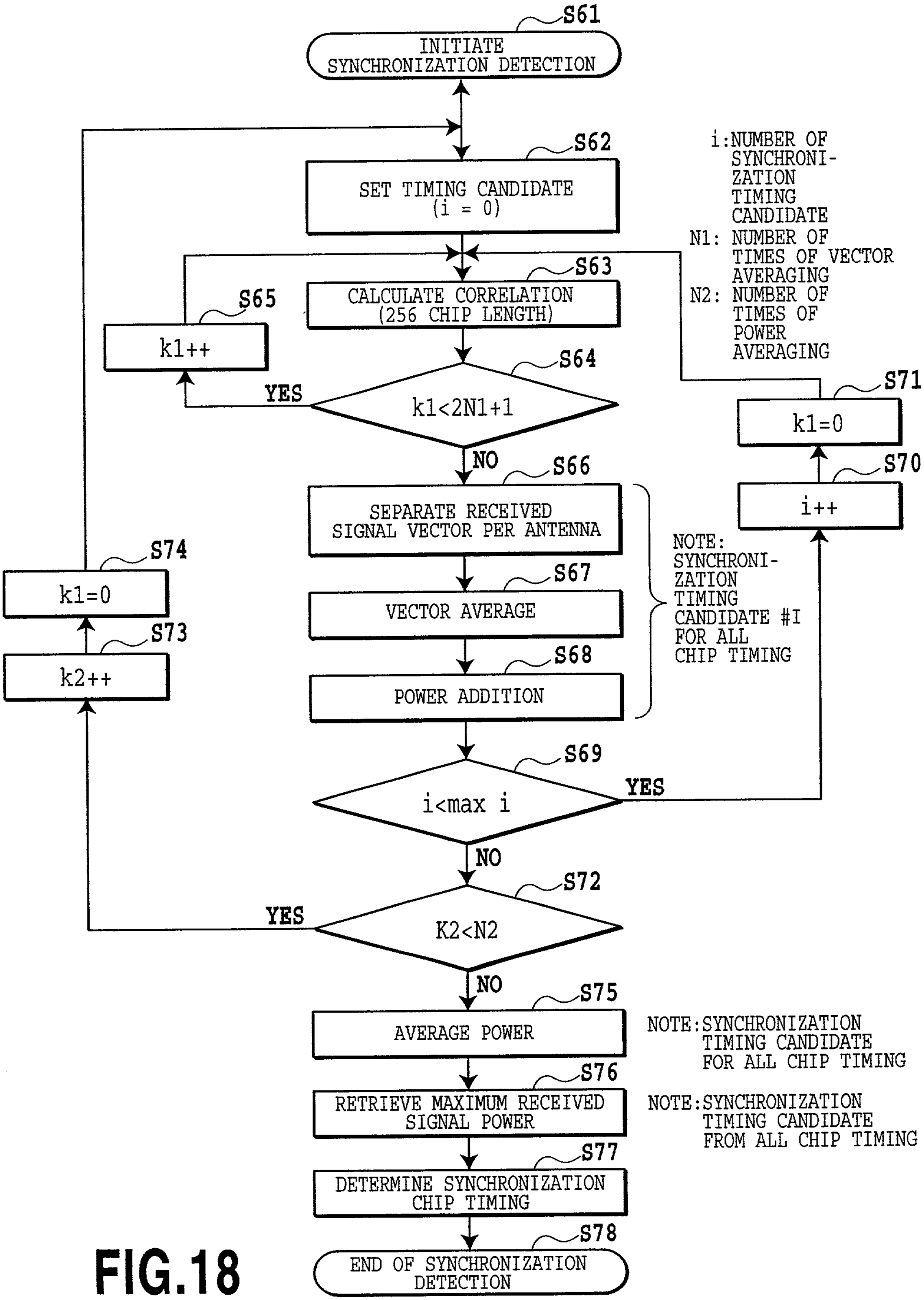

S61
INITIATE SYNCHRONIZATION DETECTION
S62
SET TIMING CANDIDATE (i = 0)
i:NUMBER OF SYNCHRONI-ZATION TIMING CANDIDATE
N1: NUMBER OF TIMES OF VECTOR AVERAGING
N2: NUMBER OF TIMES OF POWER AVERAGING
S63
CALCULATE CORRELATION (256 CHIP LENGTH)
S65
k1++
S64
k1<2N1+1
YES
NO
S71
k1=0
S70
i++
S66
SEPARATE RECEIVED SIGNAL VECTOR PER ANTENNA
S67
VECTOR AVERAGE
S68
POWER ADDITION
NOTE: SYNCHRONI-ZATION TIMING CANDIDATE #I FOR ALL CHIP TIMING
S74
k1=0
S73
k2++
S69
i<max i
YES
NO
S72
K2<N2
YES
NO
S75
AVERAGE POWER
NOTE:SYNCHRONIZATION TIMING CANDIDATE FOR ALL CHIP TIMING
S76
RETRIEVE MAXIMUM RECEIVED SIGNAL POWER
NOTE:SYNCHRONIZATION TIMING CANDIDATE FROM ALL CHIP TIMING
S77
DETERMINE SYNCHRONIZATION CHIP TIMING
S78
END OF SYNCHRONIZATION DETECTION

FIG.18

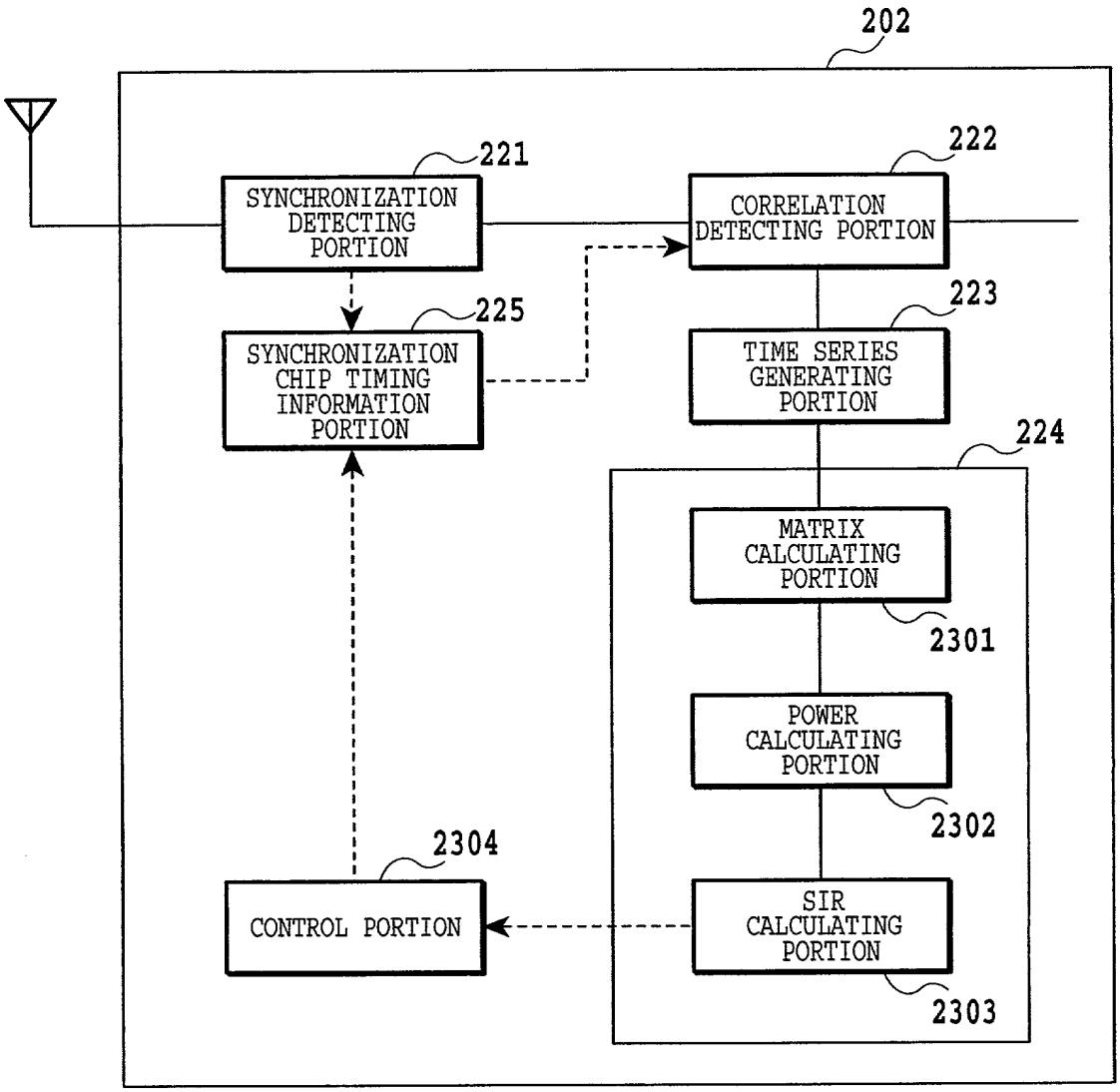
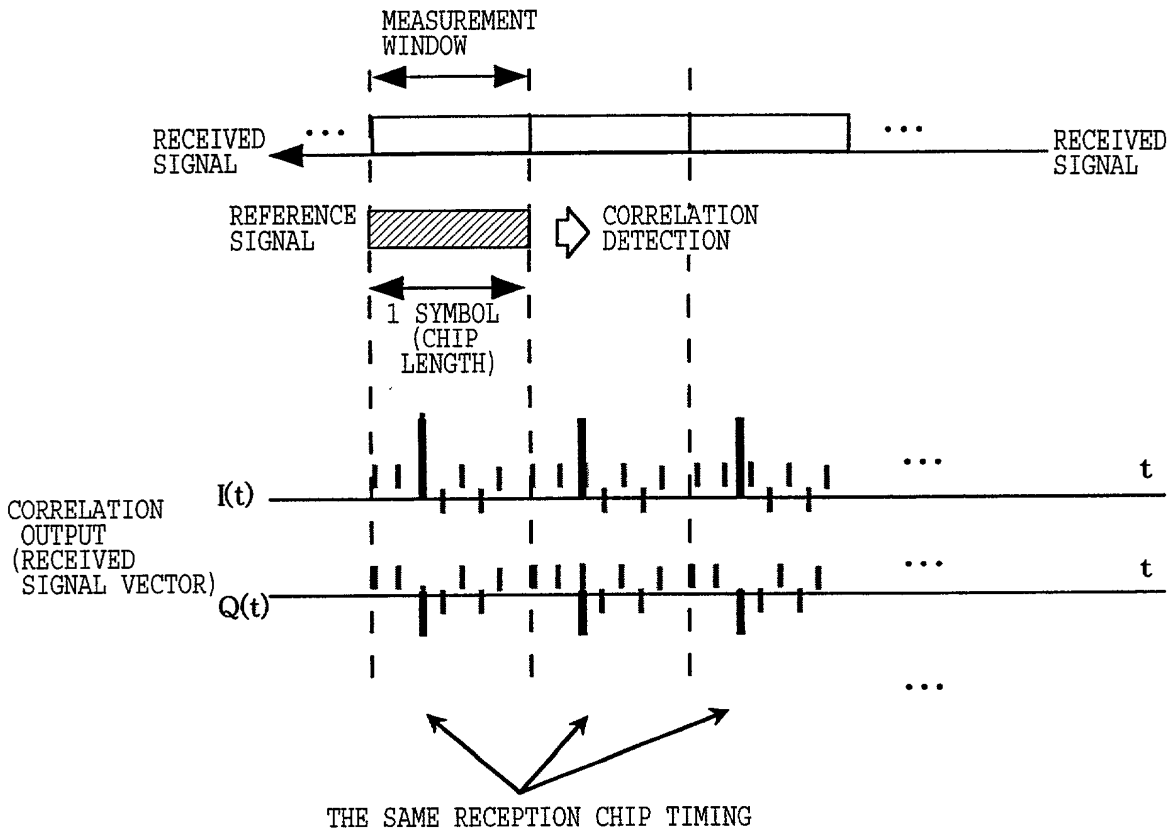

202
221
SYNCHRONIZATION DETECTING PORTION
222
CORRELATION DETECTING PORTION
225
SYNCHRONIZATION CHIP TIMING INFORMATION PORTION
223
TIME SERIES GENERATING PORTION
224
MATRIX CALCULATING PORTION
2301
POWER CALCULATING PORTION
2302
2304
CONTROL PORTION
SIR CALCULATING PORTION
2303

FIG.19



RECEIVED SIGNAL VECTOR OF CHIP TIMING k

SERIES 1 $\mathbf{r}_{\_k}(t) = I_{\_k}(t) + jQ_{\_k}(t)$

SERIES 2 $\mathbf{r}_{\_k}(t+n\Delta\tau) = I_{\_k}(t+n\Delta\tau) + jQ_{\_k}(t+n\Delta\tau)$ WHEREIN $\Delta\tau$ IS 1 SYMBOL PERIOD

COVARIANT MATRIX OF SERIES 1 AND 2

$$Rrr = \begin{bmatrix} \langle \mathbf{r}_{\_k}(t)\cdot\mathbf{r}_{\_k}{}^{H}(t)\rangle & \langle \mathbf{r}_{\_k}(t)\cdot\mathbf{r}_{\_k}{}^{H}(t+n\Delta\tau)\rangle \\ \langle \mathbf{r}_{\_k}(t+n\Delta\tau)\cdot\mathbf{r}_{\_k}{}^{H}(t)\rangle & \langle \mathbf{r}_{\_k}(t+n\Delta\tau)\cdot\mathbf{r}_{\_k}{}^{H}(t+n\Delta\tau)\rangle \end{bmatrix}$$

EIGENVALUE

$\lambda_1, \lambda_2 \ (\lambda_1 > \lambda_2)$

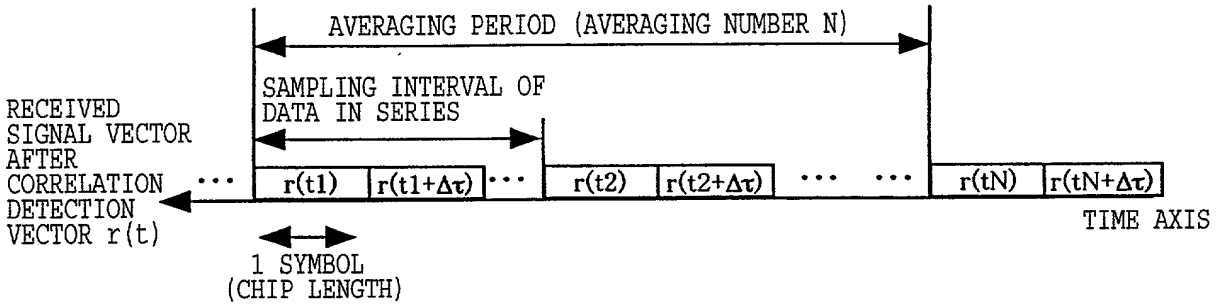
CHIP TIMING k

DESIRED SIGNAL POWER $P_{S\_k} = \frac{\lambda_1 - \lambda_2}{2}$

INTERFERENCE SIGNAL POWER $P_{I\_k} = \lambda_2$

(WHEREIN $N\Delta\tau$ IS SUFFICIENTLY SHORT PERIOD FOR FLUCTUA)

FIG.20



RECEIVED SIGNAL VECTOR OF CHIP TIMING $r_k(t1)$

SERIES 1 $r_k(t1)$ $r_k(t2)$ ··· $r_k(tN)$

SERIES 2 $r_k(t1+\Delta\tau)$ $r_k(t2+\Delta\tau)$ ··· $r_k(tN+\Delta\tau)$

ADD VECTOR $: \alpha_k(t) = r_k(t) + r_k(t+\Delta\tau)$

DIFFERENCE VECTO: $\beta_k(t) = r_k(t) - r_k(t+\Delta\tau)$

CHIP TIMING k

DESIRED SIGNAL POWER $P_{S\_k} = \dfrac{|P'_{S\_k} - P_{I\_k}|}{2}$

INTERFERENCE SIGNAL POWER $P_{I\_k} = \dfrac{1}{N}\sum_{j=1}^{N}\dfrac{|\beta(t_j)|^2}{2}$

WHEREIN $P'_{S\_k} = \dfrac{1}{N}\sum_{j=1}^{N}\dfrac{|\alpha(t_j)|^2}{2}$

FIG.21

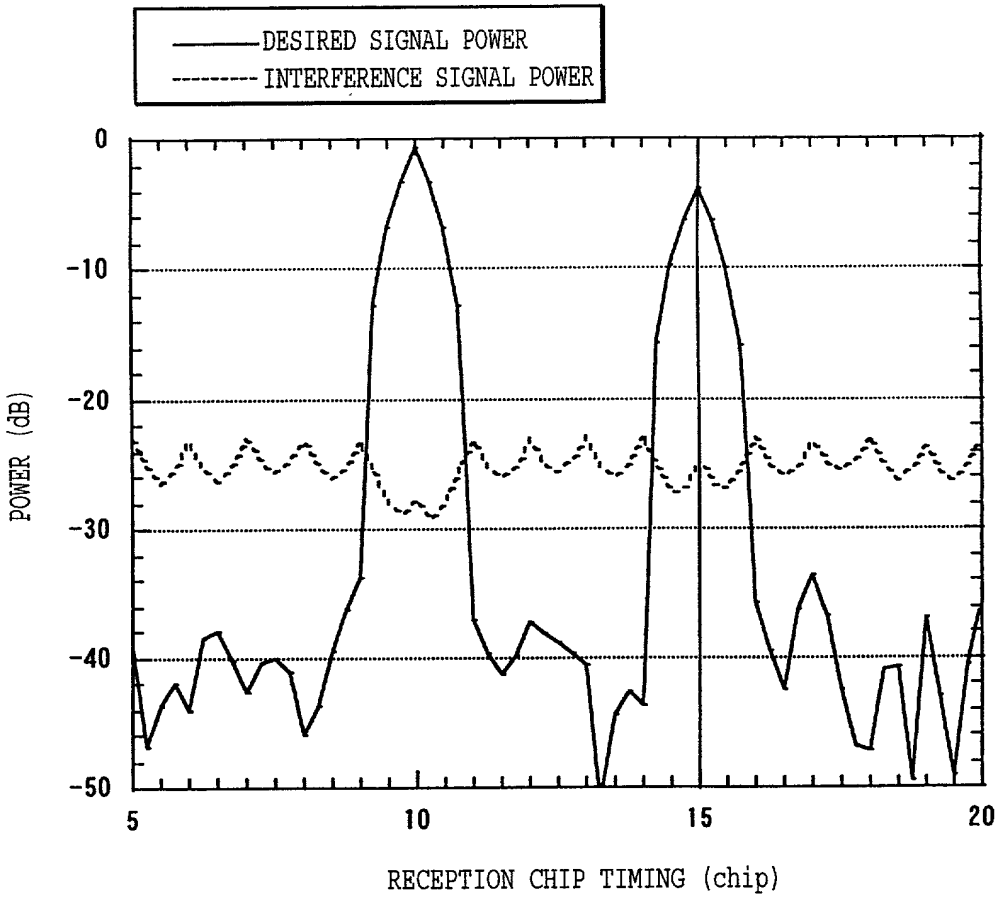
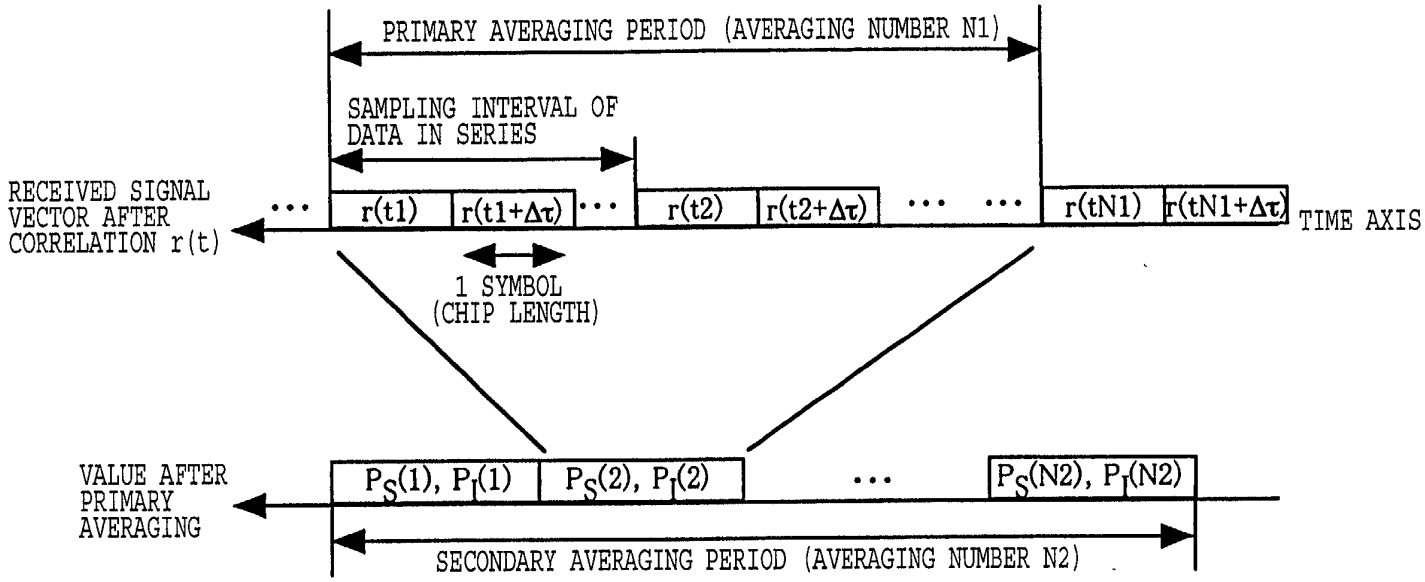

DESIRED SIGNAL POWER
INTERFERENCE SIGNAL POWER
POWER (dB)
0
-10
-20
-30
-40
-50
5
10
15
20
RECEPTION CHIP TIMING (chip)

FIG.22



CHIP TIMING k OF AFTER SECONDARY AVERAGING

DESIRED SIGNAL POWER

$$P_{S\_k} = \frac{1}{N2}\sum_{j=1}^{N2} P_{S\_k}(j)$$

INTERFERENCE SIGNAL POWER

$$P_{I\_k} = \frac{1}{N2}\sum_{j=1}^{N2} P_{I\_k}(j)$$

FIG.23

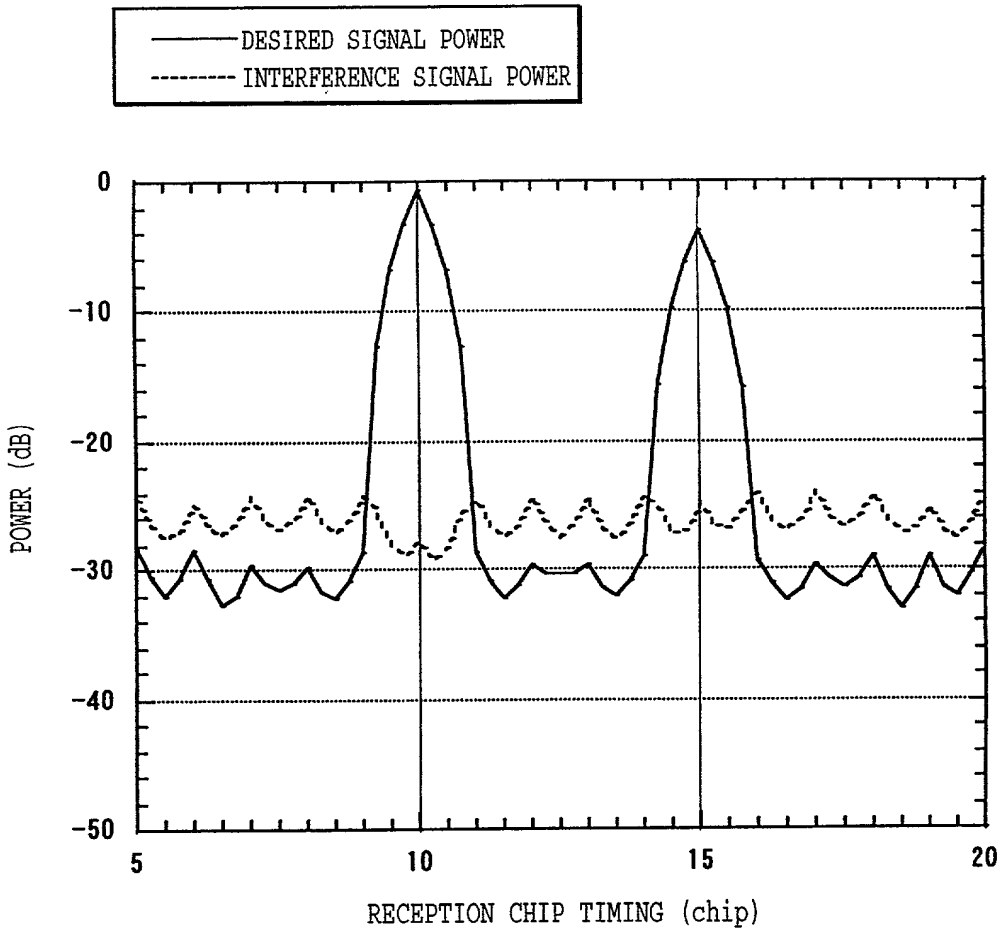

DESIRED SIGNAL POWER
INTERFERENCE SIGNAL POWER
POWER (dB)
0
-10
-20
-30
-40
-50
5
10
15
20
RECEPTION CHIP TIMING (chip)

FIG.24

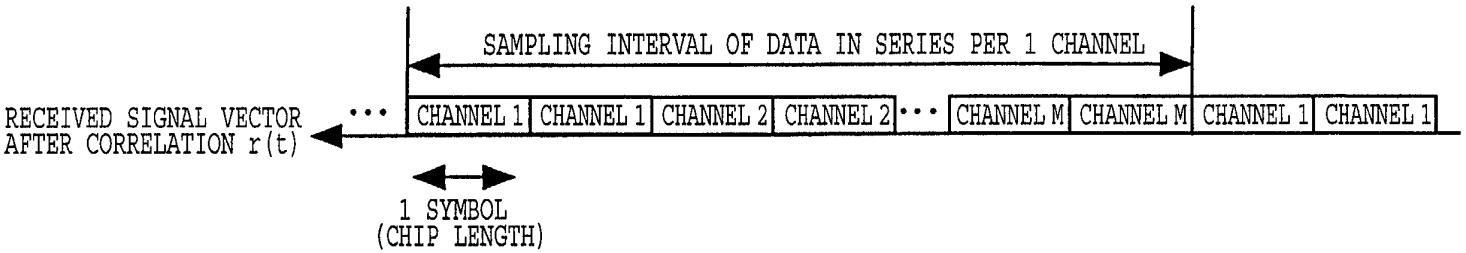

SAMPLING INTERVAL OF DATA IN SERIES PER 1 CHANNEL
RECEIVED SIGNAL VECTOR
AFTER CORRELATION r(t)
CHANNEL 1
CHANNEL 1
CHANNEL 2
CHANNEL 2
CHANNEL M
CHANNEL M
CHANNEL 1
CHANNEL 1
1 SYMBOL
(CHIP LENGTH)

FIG.25

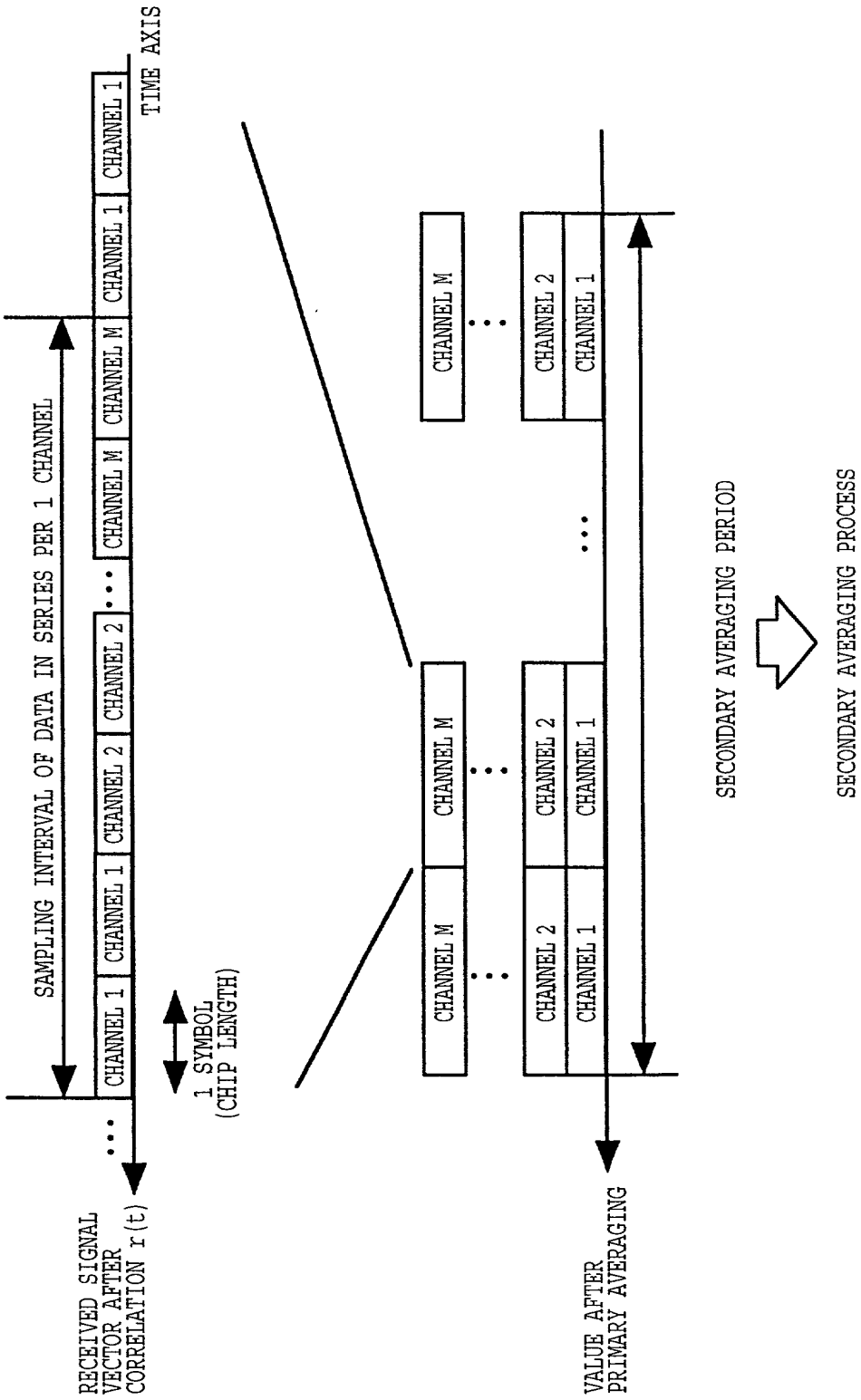

SAMPLING INTERVAL OF DATA IN SERIES PER 1 CHANNEL
CHANNEL 1
CHANNEL 2
CHANNEL M
TIME AXIS
1 SYMBOL
(CHIP LENGTH)
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION r(t)
VALUE AFTER
PRIMARY AVERAGING
SECONDARY AVERAGING PERIOD
SECONDARY AVERAGING PROCESS

FIG.26

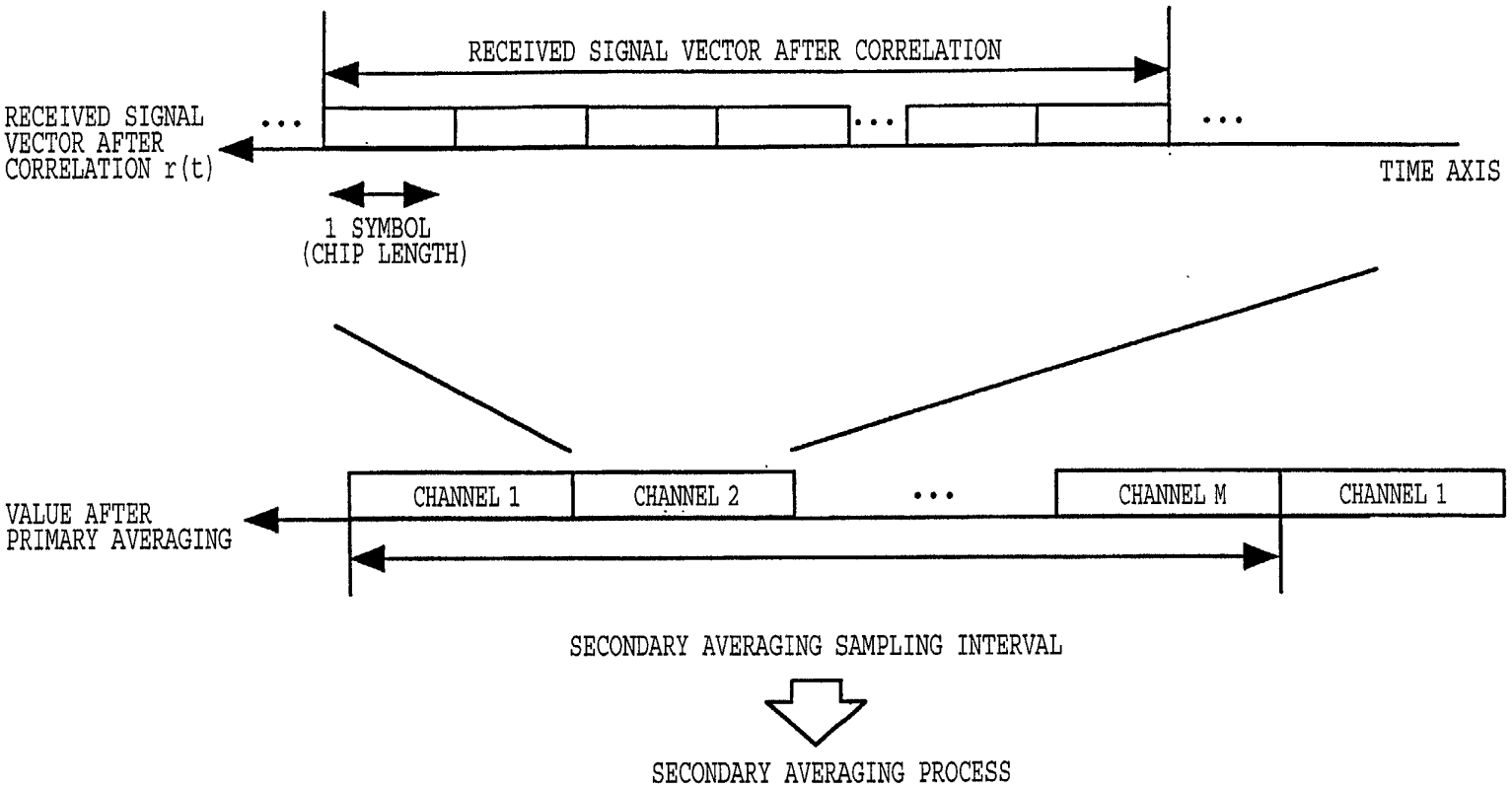

RECEIVED SIGNAL VECTOR AFTER CORRELATION
RECEIVED SIGNAL VECTOR AFTER CORRELATION r(t)
TIME AXIS
1 SYMBOL (CHIP LENGTH)
VALUE AFTER PRIMARY AVERAGING
CHANNEL 1
CHANNEL 2
CHANNEL M
CHANNEL 1
SECONDARY AVERAGING SAMPLING INTERVAL
SECONDARY AVERAGING PROCESS

FIG.27

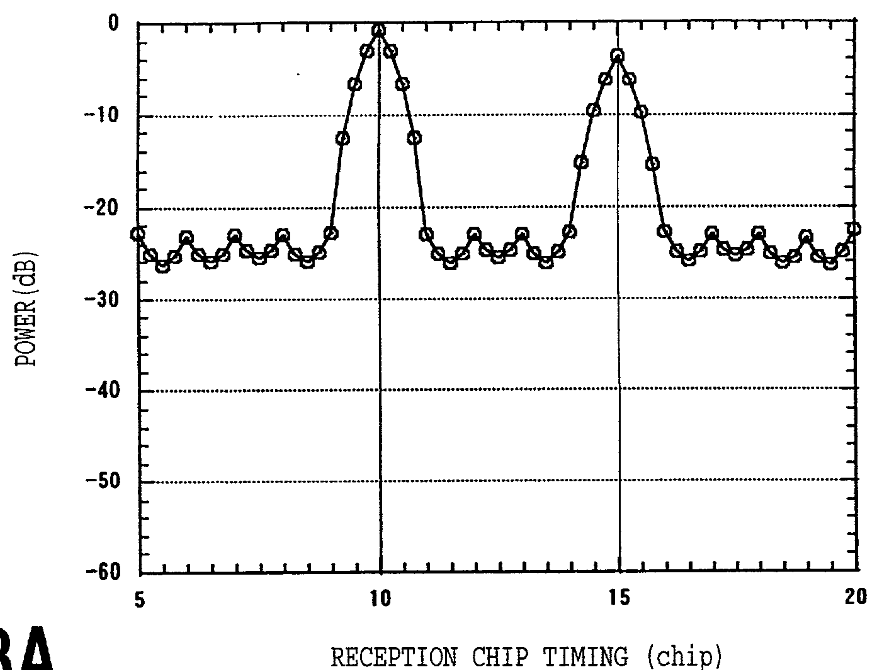


FIG.28A

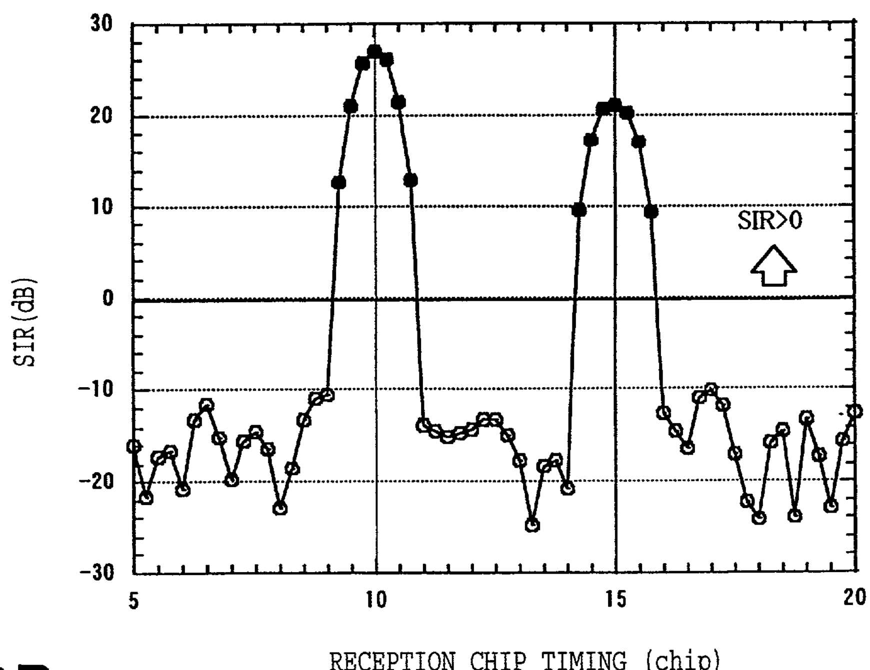
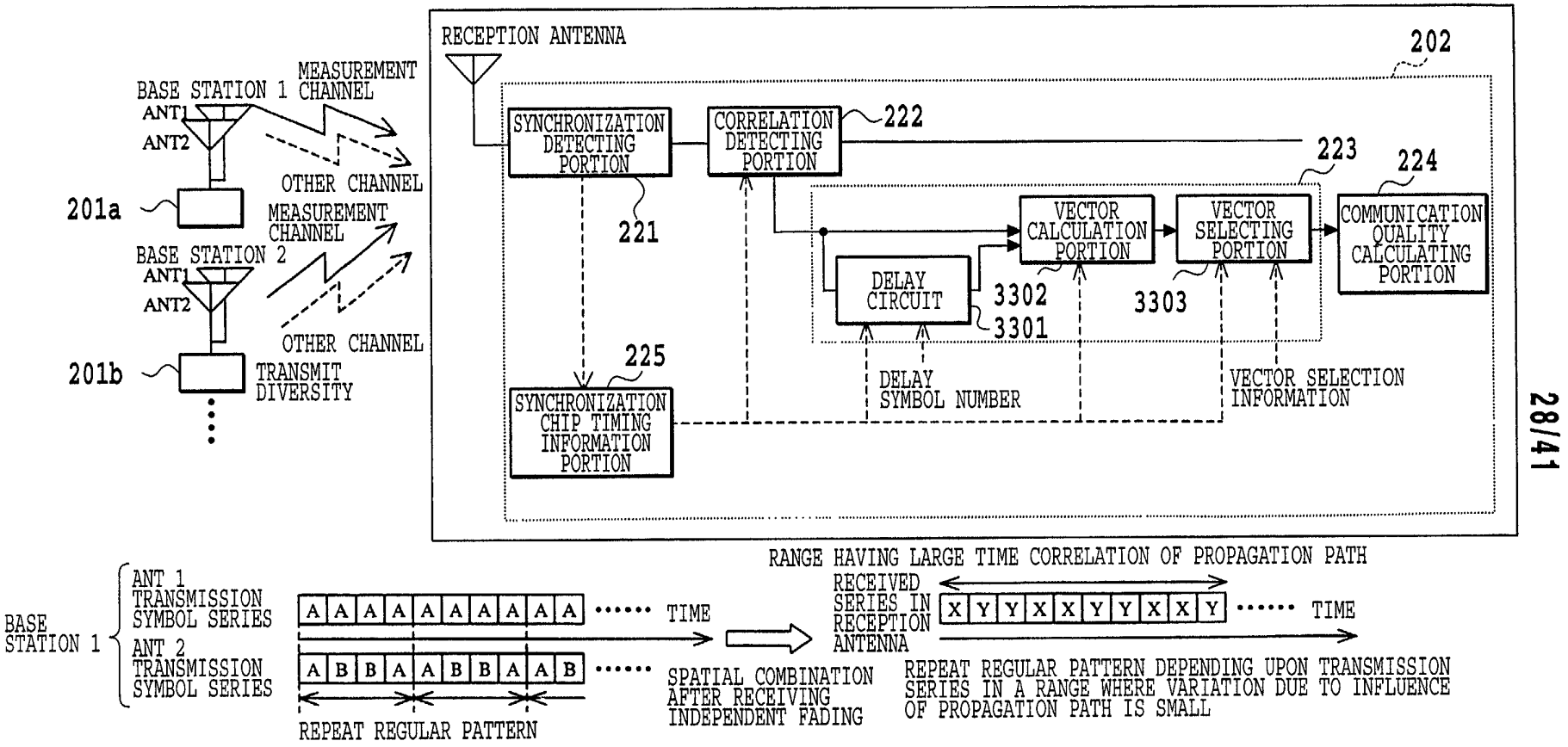
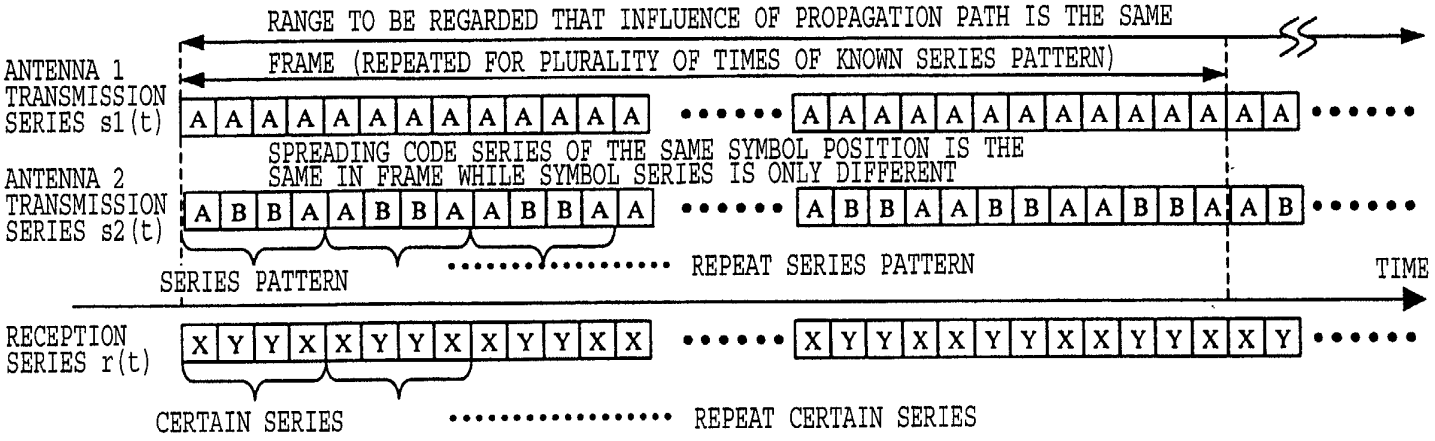


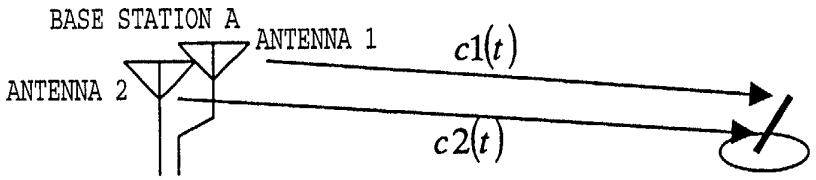
FIG.28B



※ A, B ARE TRANSMISSION SYMBOLS AND X, Y ARE RECEPTION SYMBOLS

FIG.29





$$r(t) = c1(t) \cdot s1(t) + c2(t) \cdot s2(t)$$

IN RAGE WHERE TIME CORRELATION OF PROPAGATION PATH BECOMES LARGE, c1(t) AND c2(t) CAN BE REGARDED AS CONSTANT

$$c1(t) \cong c1$$

$$c2(t) \cong c2$$

IN RAGE WHERE TIME CORRELATION OF PROPAGATION PATH BECOMES LARGE

WHEN TRANSMISSION SYMBOL (ANTENNA 1, ANTENNA 2) = (A, A)

$$r(t) = c1 \cdot A + c2 \cdot A = (c1 + c2) \cdot A = Y$$

WHEN TRANSMISSION SYMBOL (ANTENNA 1, ANTENNA 2) = (A, B)

$$r(t) = c1 \cdot A + c2 \cdot B = (c1 + c2 \cdot B/A) \cdot A = X$$

FIG.30

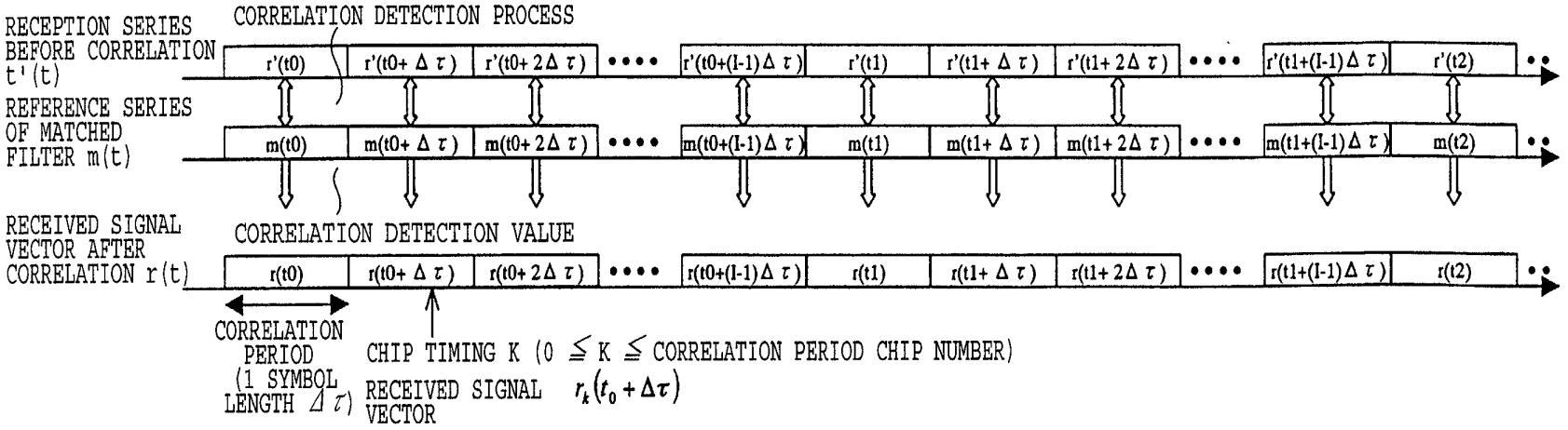

RECEPTION SERIES BEFORE CORRELATION t'(t)
CORRELATION DETECTION PROCESS
r'(t0)
r'(t0+ Δ τ)
r'(t0+ 2Δ τ)
r'(t0+(I-1)Δ τ)
r'(t1)
r'(t1+ Δ τ)
r'(t1+ 2Δ τ)
r'(t1+(I-1)Δ τ)
r'(t2)
REFERENCE SERIES OF MATCHED FILTER m(t)
m(t0)
m(t0+ Δ τ)
m(t0+ 2Δ τ)
m(t0+(I-1)Δ τ)
m(t1)
m(t1+ Δ τ)
m(t1+ 2Δ τ)
m(t1+(I-1)Δ τ)
m(t2)
RECEIVED SIGNAL VECTOR AFTER CORRELATION r(t)
CORRELATION DETECTION VALUE
r(t0)
r(t0+ Δ τ)
r(t0+ 2Δ τ)
r(t0+(I-1)Δ τ)
r(t1)
r(t1+ Δ τ)
r(t1+ 2Δ τ)
r(t1+(I-1)Δ τ)
r(t2)
CORRELATION PERIOD (1 SYMBOL LENGTH Δ τ)
CHIP TIMING K (0 ≦ K ≦ CORRELATION PERIOD CHIP NUMBER)
RECEIVED SIGNAL VECTOR $r_k(t_0+\Delta\tau)$

FIG.31

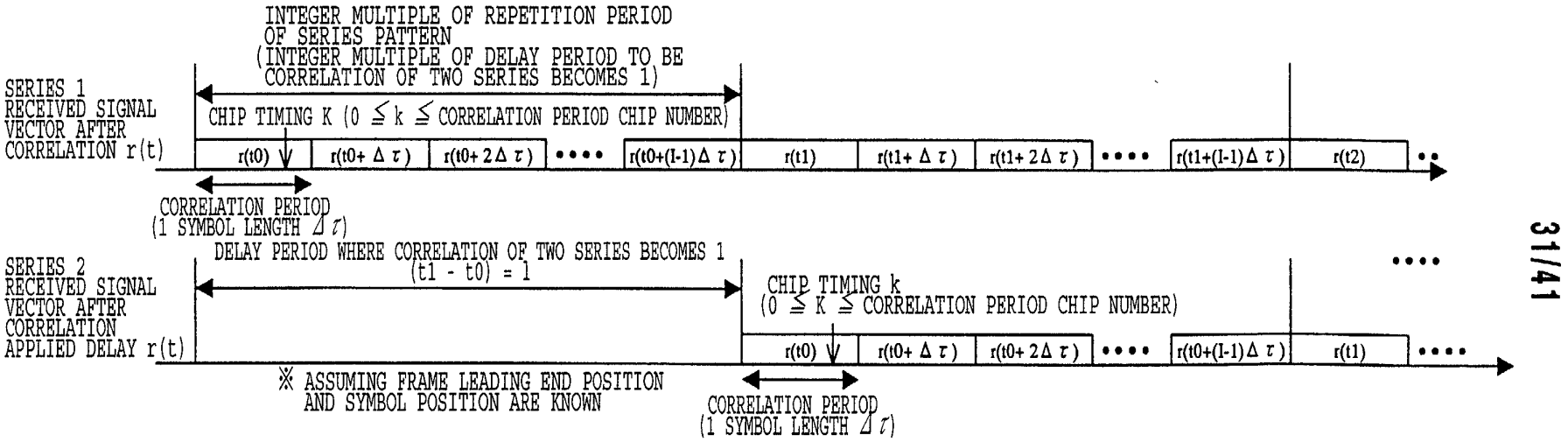
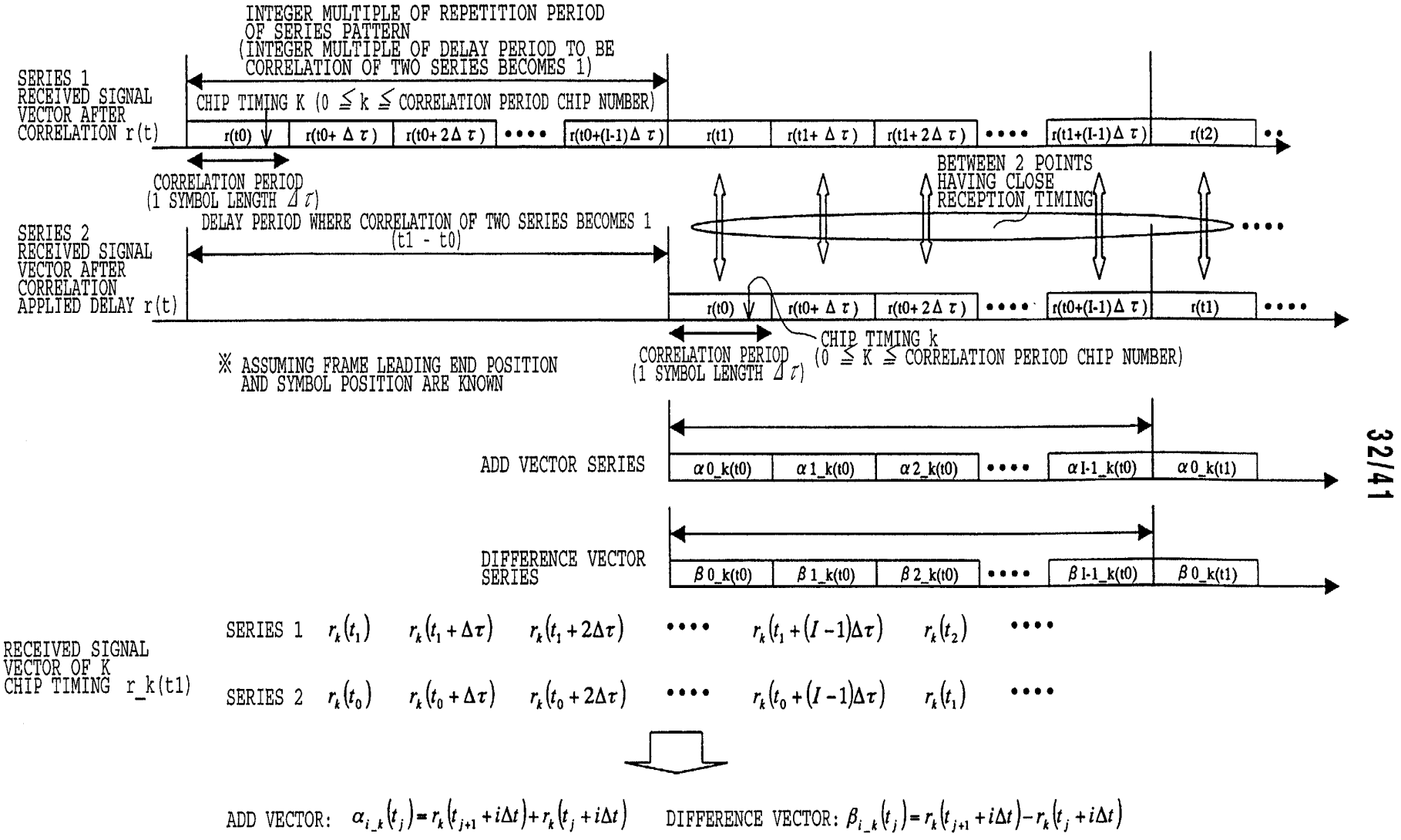

INTEGER MULTIPLE OF REPETITION PERIOD
OF SERIES PATTERN
(INTEGER MULTIPLE OF DELAY PERIOD TO BE
CORRELATION OF TWO SERIES BECOMES 1)
SERIES 1
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION r(t)
CHIP TIMING K (0 ≦ k ≦ CORRELATION PERIOD CHIP NUMBER)
r(t0)
r(t0+ Δ τ)
r(t0+ 2Δ τ)
r(t0+(I-1)Δ τ)
r(t1)
r(t1+ Δ τ)
r(t1+ 2Δ τ)
r(t1+(I-1)Δ τ)
r(t2)
CORRELATION PERIOD
(1 SYMBOL LENGTH Δ τ)
DELAY PERIOD WHERE CORRELATION OF TWO SERIES BECOMES 1
(t1 - t0) = 1
SERIES 2
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION
APPLIED DELAY r(t)
CHIP TIMING k
(0 ≦ K ≦ CORRELATION PERIOD CHIP NUMBER)
r(t0)
r(t0+ Δ τ)
r(t0+ 2Δ τ)
r(t0+(I-1)Δ τ)
r(t1)
※ ASSUMING FRAME LEADING END POSITION
AND SYMBOL POSITION ARE KNOWN
CORRELATION PERIOD
(1 SYMBOL LENGTH Δ τ)

FIG.32



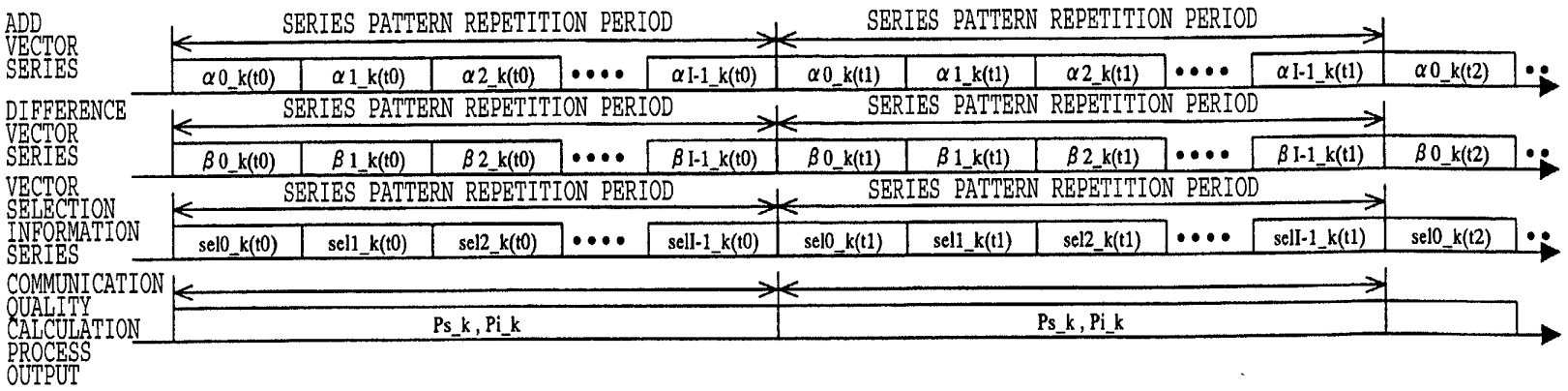
RECEIVED SIGNAL VECTOR OF K CHIP TIMING r_k(t1)

SERIES 1 $r_k(t_1)$ $r_k(t_1+\Delta\tau)$ $r_k(t_1+2\Delta\tau)$ •••• $r_k(t_1+(I-1)\Delta\tau)$ $r_k(t_2)$ ••••

SERIES 2 $r_k(t_0)$ $r_k(t_0+\Delta\tau)$ $r_k(t_0+2\Delta\tau)$ •••• $r_k(t_0+(I-1)\Delta\tau)$ $r_k(t_1)$ ••••

ADD VECTOR: $\alpha_{i\_k}(t_j)=r_k(t_{j+1}+i\Delta t)+r_k(t_j+i\Delta t)$ DIFFERENCE VECTOR: $\beta_{i\_k}(t_j)=r_k(t_{j+1}+i\Delta t)-r_k(t_j+i\Delta t)$

FIG.33



ADD VECTOR AFTER SELECTION $\alpha'_{i\_k}(t_j) = sel_{i\_k}(t_j) \cdot \alpha_{i\_k}(t_j)$

DIFFERENCE VECTOR AFTER SELECTION $\beta'_{i\_k}(t_j) = sel_{i\_k}(t_j) \cdot \beta_{i\_k}(t_j)$

VECTOR SELECTION INFORMATION
$sel_{i\_k}(t_j) = 1$ SELECTION ON
$sel_{i\_k}(t_j) = 0$ SELECTION OFF

DESIRED SIGNAL POWER $P_{S\_k} = \dfrac{\left|P'_{S\_k} - P_{I\_k}\right|}{2}$

WHEREIN $P'_{S\_k} = \dfrac{1}{N}\sum_{j=0}^{J-1}\sum_{i=0}^{I-1}\dfrac{\left|\alpha'_{i\_k}(t_j)\right|^2}{2}$

INTERFERENCE SIGNAL POWER $P_{I\_k} = \dfrac{1}{N}\sum_{j=0}^{J-1}\sum_{i=0}^{I-1}\dfrac{\left|\beta''_{i\_k}(t_j)\right|^2}{2}$

I IS DELAY SYMBOL NUMBER

J IS SERIES PATTERN REPETITION NUMBER OF AVERAGING RANGE

N IS SELECT ON NUMBER IN AVERAGING RANGE

※ WHEN AVERAGING PERIOD IN COMMUNICATION QUALITY CALCULATION PROCESS IS SERIES PATTERN REPETITION PERIOD

FIG.34

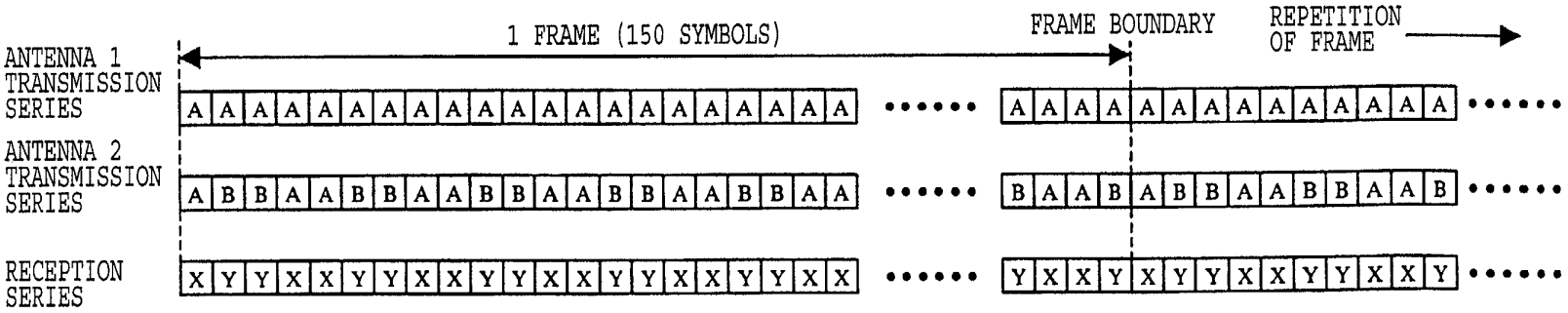

1 FRAME (150 SYMBOLS)
FRAME BOUNDARY
REPETITION OF FRAME
ANTENNA 1 TRANSMISSION SERIES
ANTENNA 2 TRANSMISSION SERIES
RECEPTION SERIES
A A A A A A A A A A A A A A A A A A A A
A A A A A A A A A A A A A A A A A A A A
A B B A A B B A A B B A A B B A A B B A A
B A A B A B B A A B B A A B
X Y Y X X Y Y X X Y Y X X Y Y X X Y Y X X
Y X X Y X Y Y X X Y Y X X Y

FIG.35

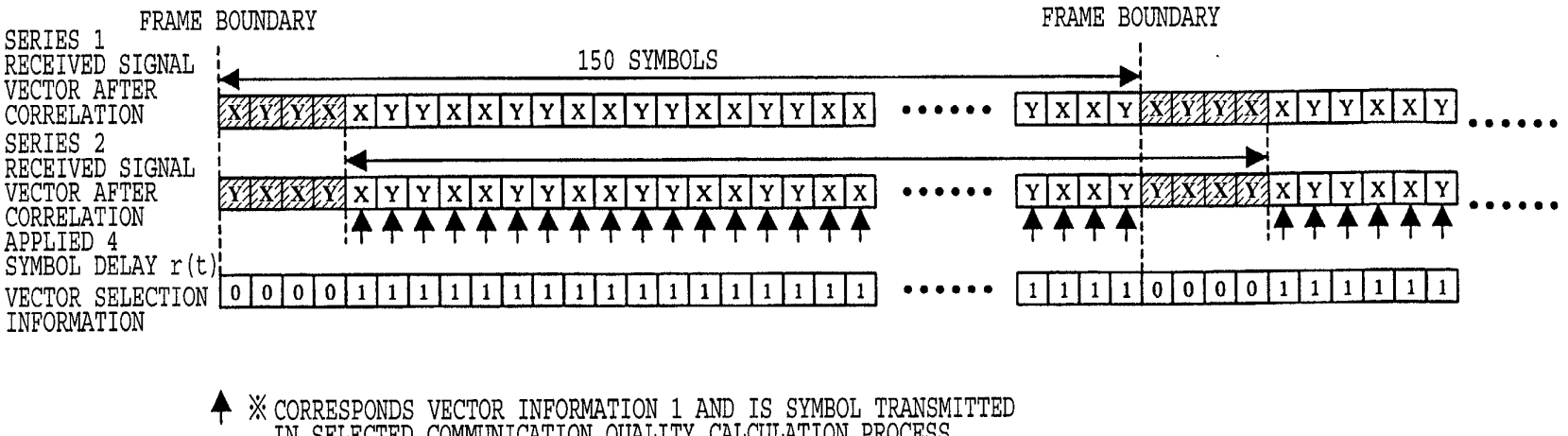

FRAME BOUNDARY
FRAME BOUNDARY
SERIES 1
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION
150 SYMBOLS
SERIES 2
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION
APPLIED 4
SYMBOL DELAY r(t)
VECTOR SELECTION
INFORMATION
※ CORRESPONDS VECTOR INFORMATION 1 AND IS SYMBOL TRANSMITTED
IN SELECTED COMMUNICATION QUALITY CALCULATION PROCESS

FIG.36

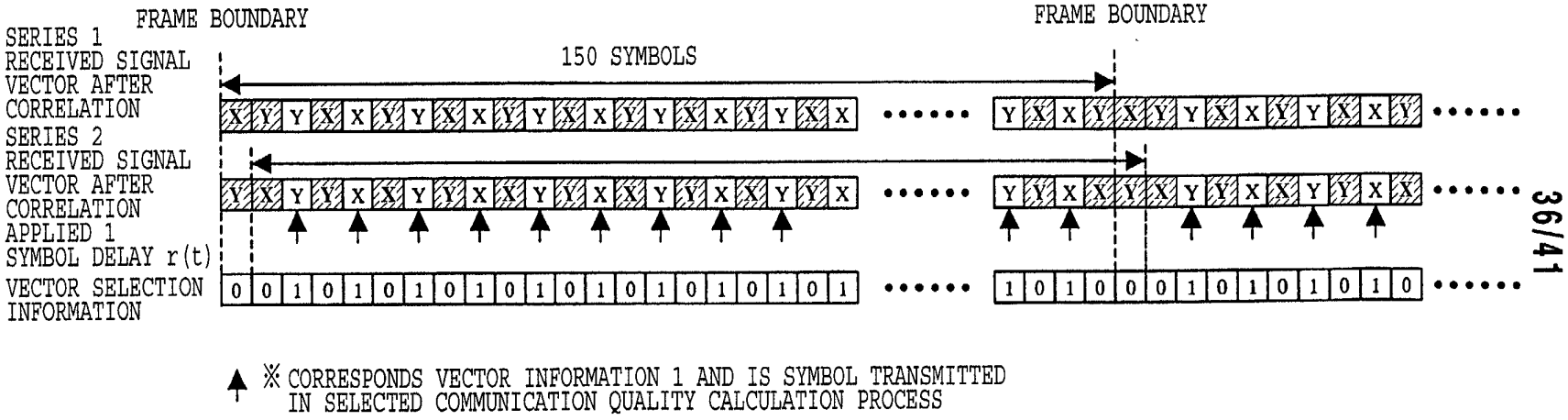

FRAME BOUNDARY
FRAME BOUNDARY
SERIES 1
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION
150 SYMBOLS
SERIES 2
RECEIVED SIGNAL
VECTOR AFTER
CORRELATION
APPLIED 1
SYMBOL DELAY r(t)
VECTOR SELECTION
INFORMATION
※ CORRESPONDS VECTOR INFORMATION 1 AND IS SYMBOL TRANSMITTED
IN SELECTED COMMUNICATION QUALITY CALCULATION PROCESS

FIG.37

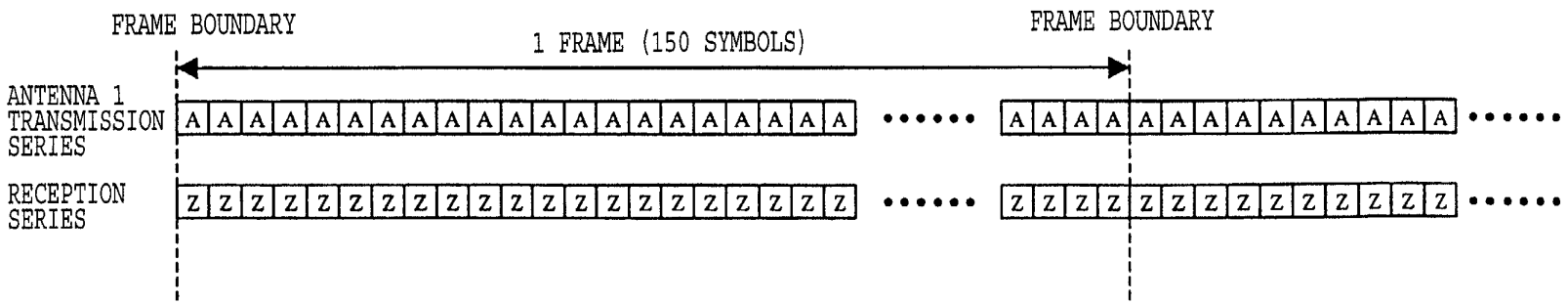
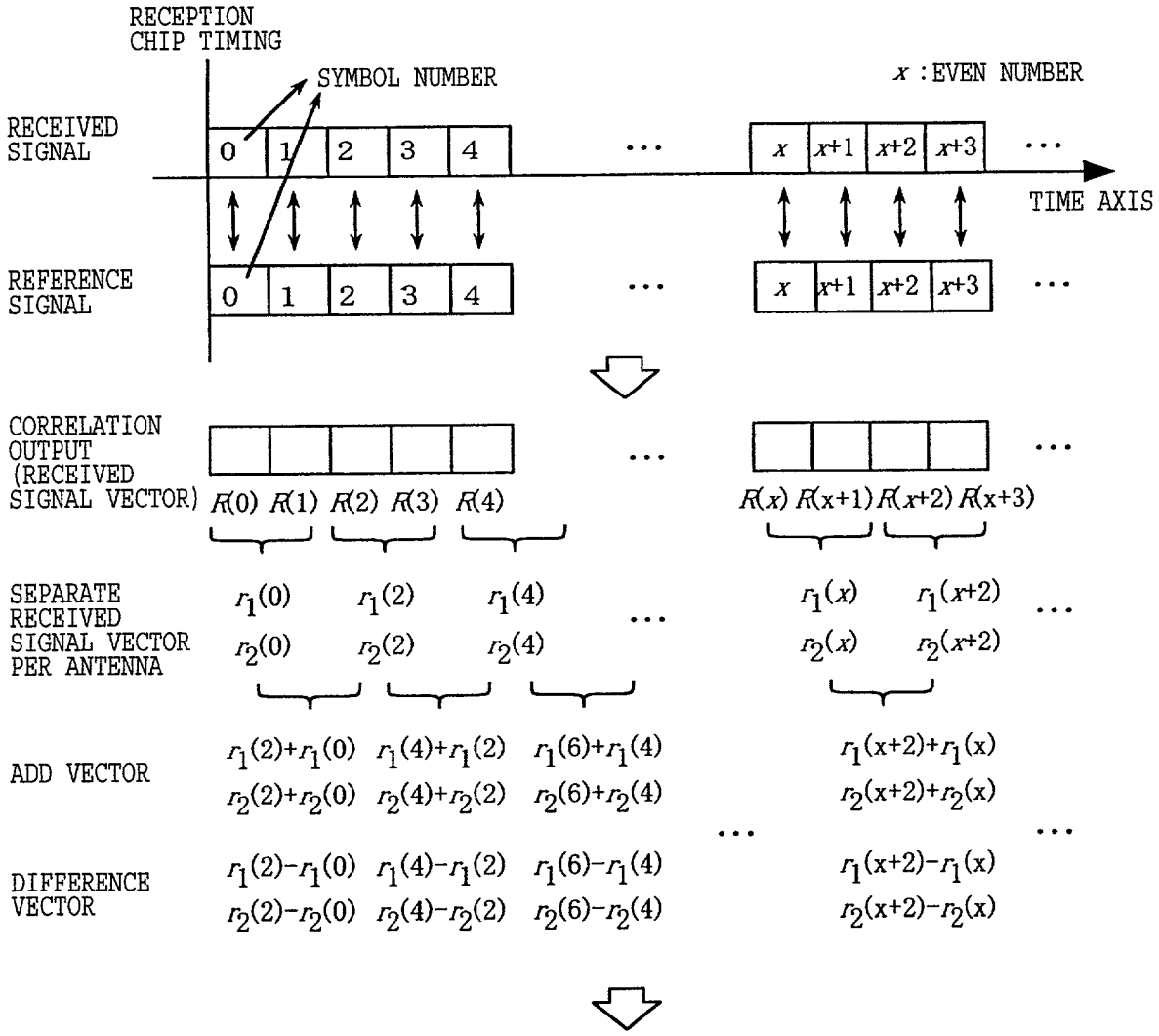

FRAME BOUNDARY
1 FRAME (150 SYMBOLS)
FRAME BOUNDARY
ANTENNA 1 TRANSMISSION SERIES
RECEPTION SERIES

FIG.38



DESIRED SIGNAL POWER

$$P_S = \frac{\left|P_S' - P_I\right|}{2}$$

BUT,

$$P_S' = \frac{1}{N}\sum_{j=0}^{N-1}\frac{\left|r_1(2j+2)+r_1(2j)\right|^2 + \left|r_2(2j+2)+r_2(2j)\right|^2}{2}$$

INTERFERENCE SIGNAL POWER

$$P_I = \frac{1}{N}\sum_{j=0}^{N-1}\frac{\left|r_1(2j+2)-r_1(2j)\right|^2 + \left|r_2(2j+2)-r_2(2j)\right|^2}{2}$$

FIG.39

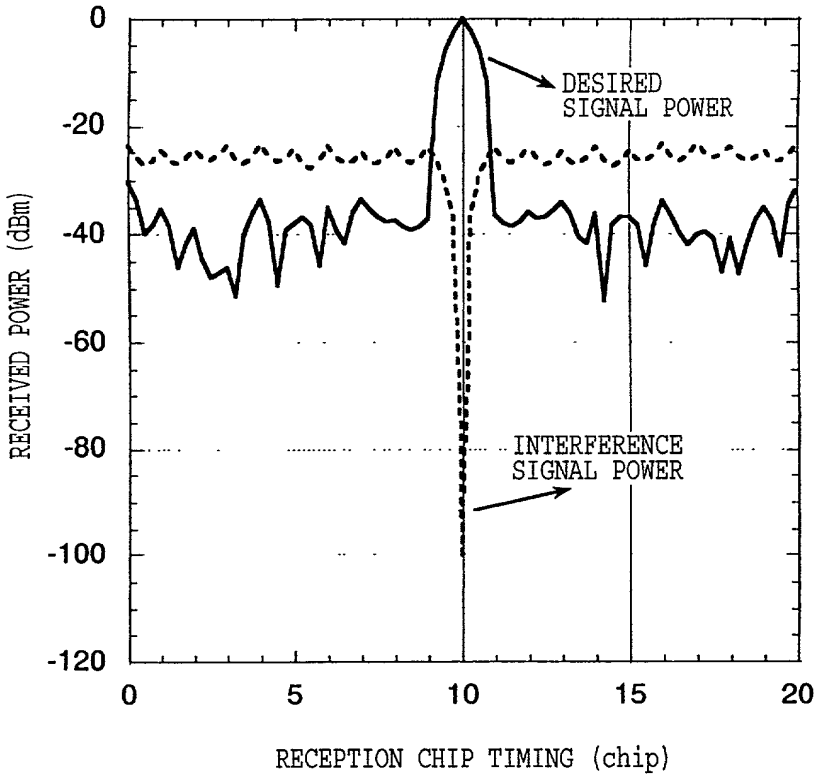
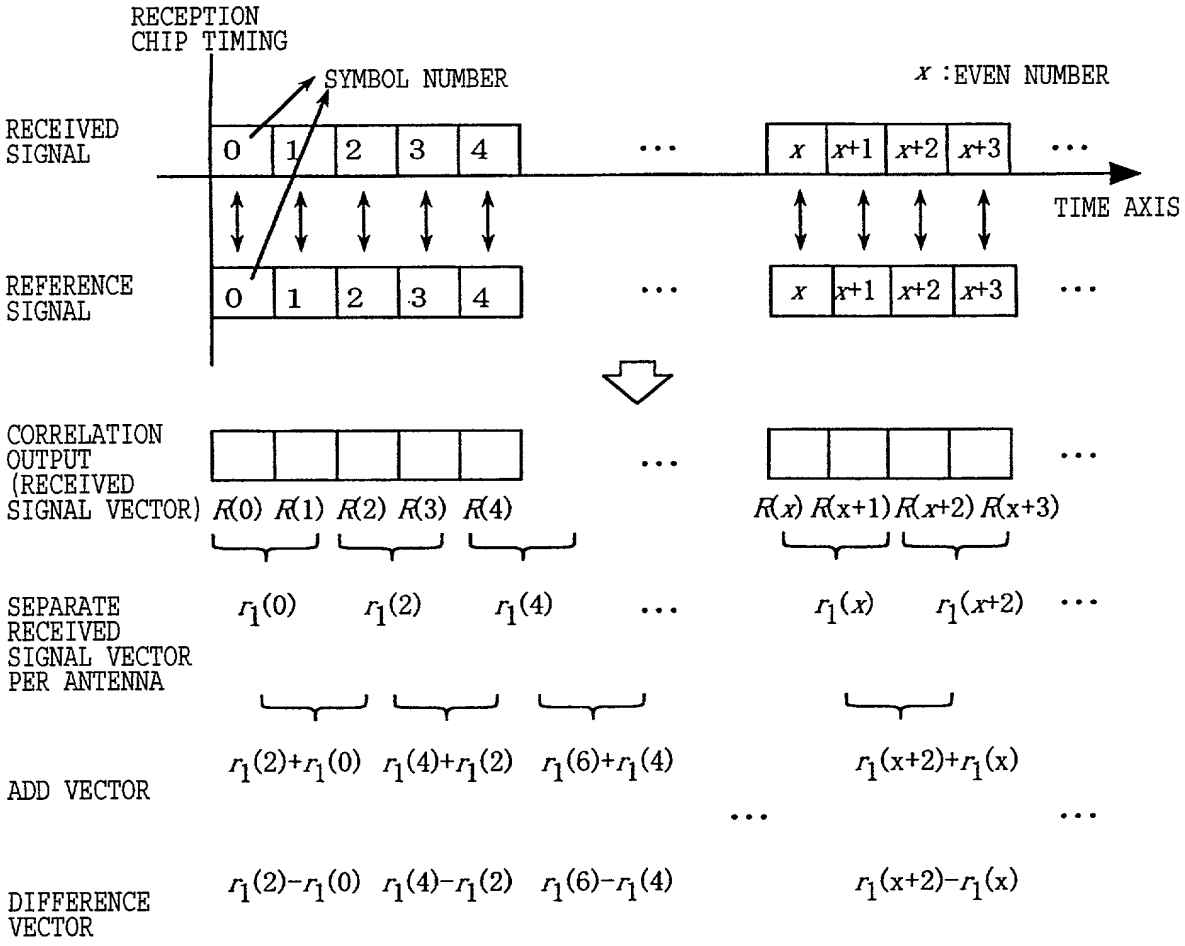

0
-20
-40
-60
-80
-100
-120
RECEIVED POWER (dBm)
0
5
10
15
20
RECEPTION CHIP TIMING (chip)
DESIRED
SIGNAL POWER
INTERFERENCE
SIGNAL POWER

FIG.40



DESIRED SIGNAL POWER

$$P_S = \frac{\left|P_S' - P_I'\right|}{2} \cdot \frac{(P_{t1} + P_{t2})}{P_{t1}}$$

BUT,

$$P_S' = \frac{1}{N}\sum_{j=0}^{N-1}\frac{\left|r_1(2j+2) + r_1(2j)\right|^2}{2}$$

INTERFERENCE SIGNAL POWER

$$P_I = P_I' \cdot \frac{P_{t1} + P_{t2}}{P_{t1}}$$

$$P_I' = \frac{1}{N}\sum_{j=0}^{N-1}\frac{\left|r_1(2j+2) - r_1(2j)\right|^2}{2}$$

FIG.41

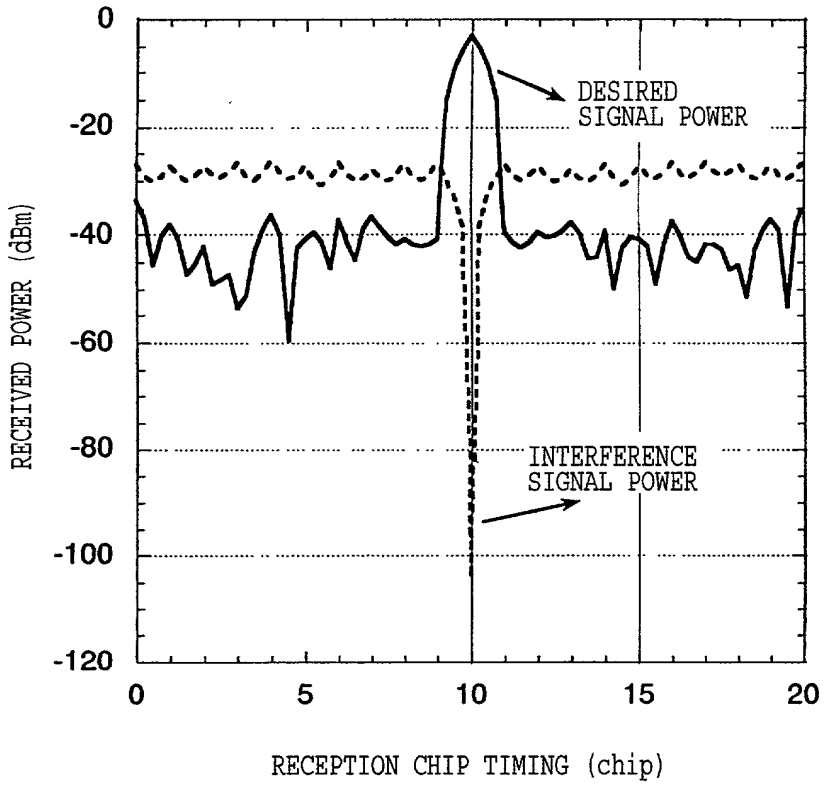

0
-20
-40
-60
-80
-100
-120
RECEIVED POWER (dBm)
DESIRED
SIGNAL POWER
INTERFERENCE
SIGNAL POWER
0
5
10
15
20
RECEPTION CHIP TIMING (chip)

FIG.42